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MEAN MERIDIONAL CROSS-SECTIONS OF THE AVAILABLE POTENTIAL ENERGY FOR EACH JANUARY AND JULY OF THE PERIOD 1973 UNTIL 1976

von

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ABSTRACT

In the framework of studies which are concerned with "physical foundations of climate" the available potential energy and its variability both in space and time was estimated by P. SPETH (1978). The computations were carried out in a mixed space-time domain for the time period 1967 through 1976 using grid-points of routine analysis of the German Weather Service, Offenbach/Main. As supplement to this study in the present report mean meridional cross-sections for each *January* and *July* of the period 1973 until 1976 are presented. The period 1967 until 1972 is given in P. SPETH (1974).

ZUSAMMENFASSUNG

Im Zusammenhang mit Arbeiten, die sich mit den "physikalischen Grundlagen des Klimas" befassen, wurde die verfügbare potentielle Energie und ihre zeitliche und räumliche Veränderlichkeit von P. SPETH (1978) berechnet. Die Untersuchungen wurden im sogenannten "mixed space-time domain" für den Zeitraum 1967 bis 1976 durchgeführt, wobei Gitterwerte von objektiven Analysen des Deutschen Wetterdienstes, Offenbach/Main, herangezogen wurden.

Als Ergänzung für diese Studie werden im vorliegenden Bericht mittlere meridionale Schnitte für jeden Januar und Juli des Zeitraumes 1973 bis 1976 wiedergegeben. Der Zeitraum 1967 bis 1972 ist gegeben bei P. SPETH (1974).

The following symbols are used:

A_{MMC}	the available potential energy produced by the mean meridional circulation
$A_{MSE,1-15}$	the available potential energy produced by the mean standing eddies (wavenumbers 1 until 15)
$A_{MSE,1}$	the available potential energy produced by the mean standing eddies (wavenumber 1)
$A_{MSE,2-3}$	the available potential energy produced by the mean standing eddies (wavenumbers 2 and 3)
$A_{MSE,1-3}$	the available potential energy produced by the mean standing eddies (wavenumbers 1 until 3)
$A_{MSE,4-8}$	the available potential energy produced by the mean standing eddies (wavenumbers 4 until 8)
A_{TE}	the available potential energy produced by the transient eddies
A_{TOC}	the total available potential energy.

REFERENCES

Speth, P., The global budget of available potential and kinetic energy, part I: The annual cycle of available potential energy and its variability throughout a ten years period (1967-1976), eingereicht bei Beitr. Phys. Atm. 51, 1978

Speth, P., Mittlere Meridionalschnitte der verfügbaren potentiellen Energie für jeden Januar und Juli aus dem Zeitraum 1967 bis 1972, Berichte IfM Kiel Nr. 2, 1974

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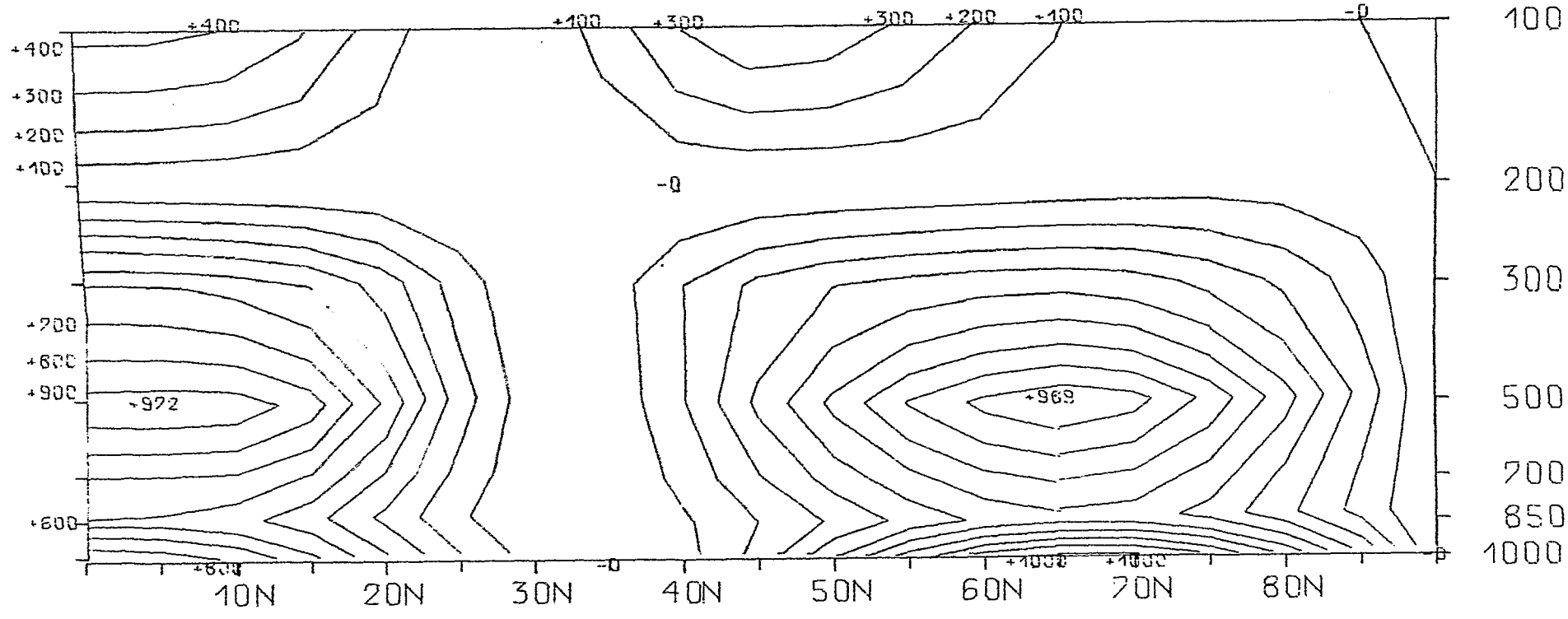

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Abb.1

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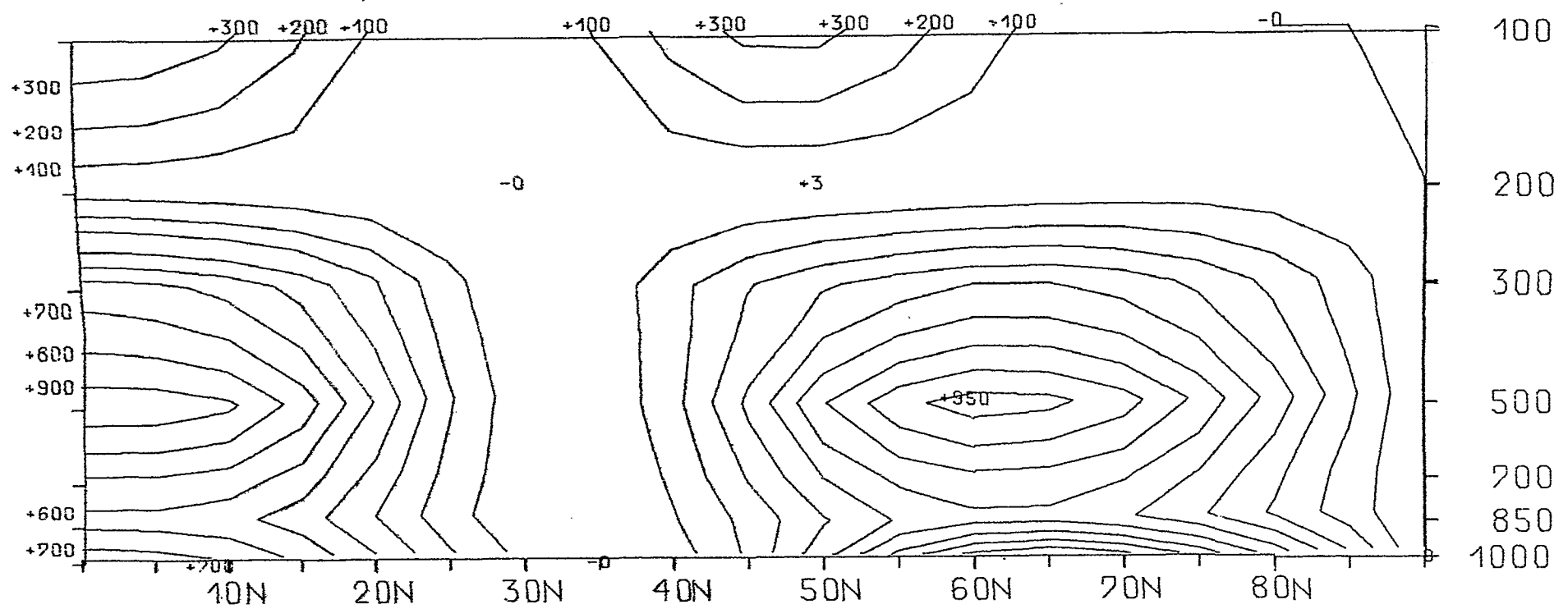

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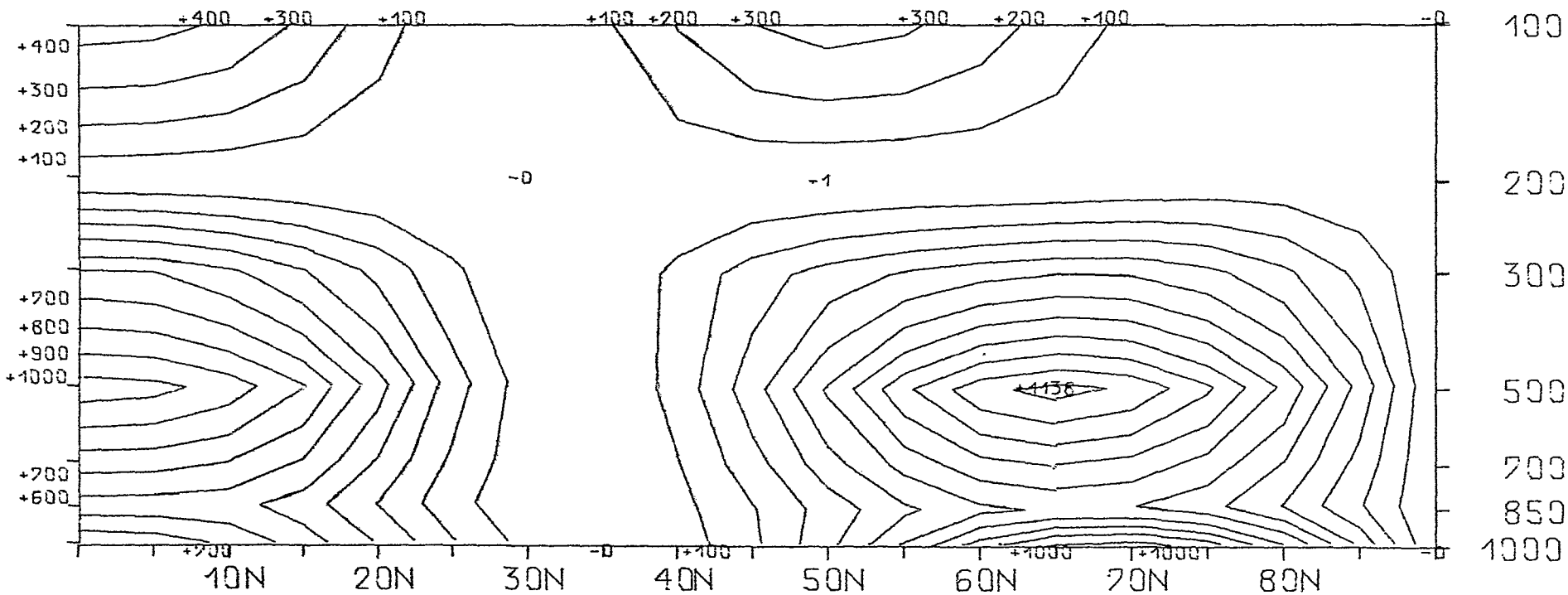

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A MMC

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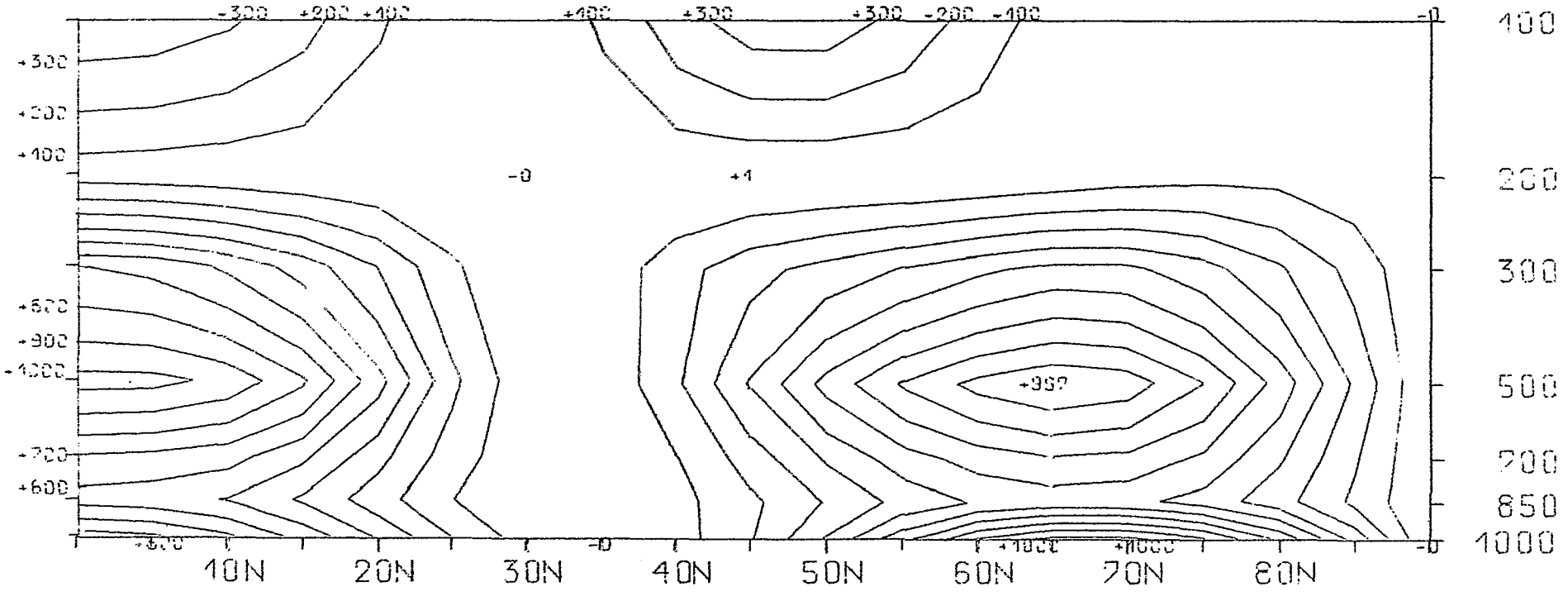

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A_{MMC}

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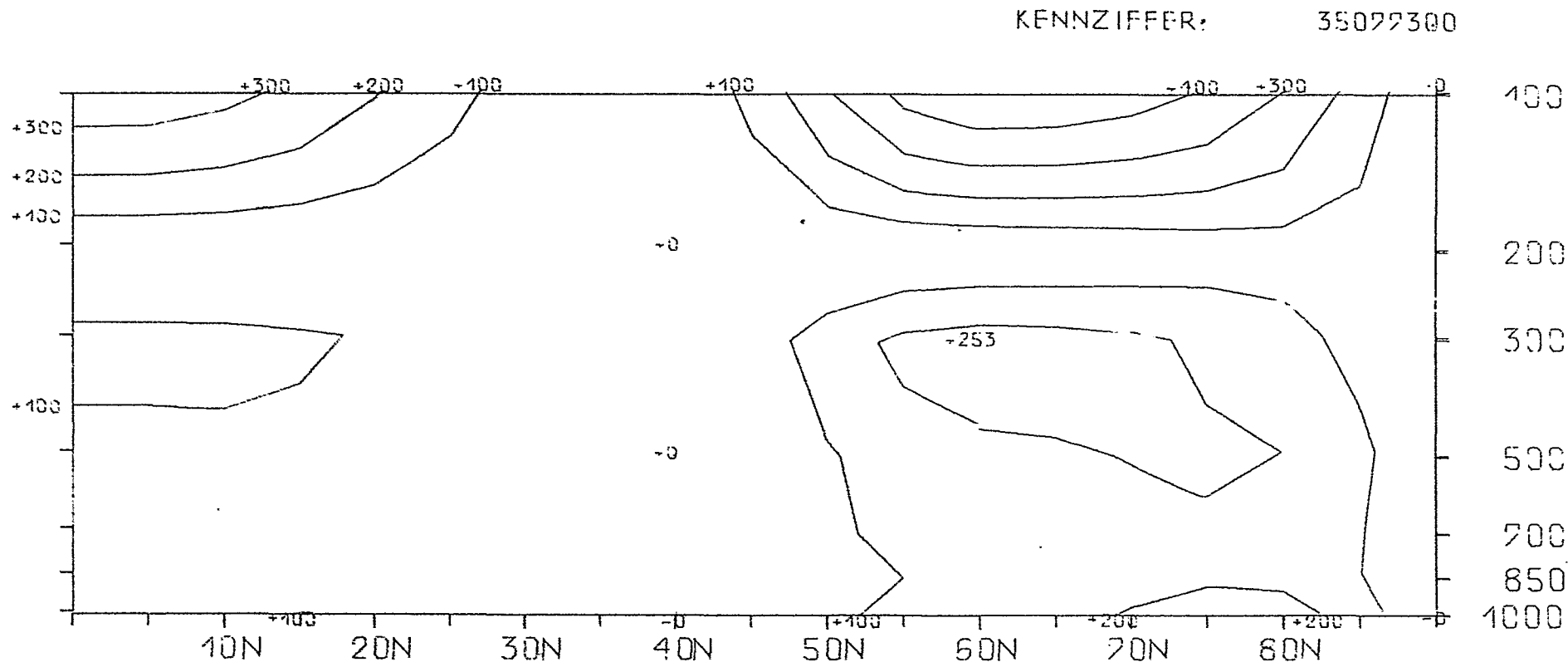

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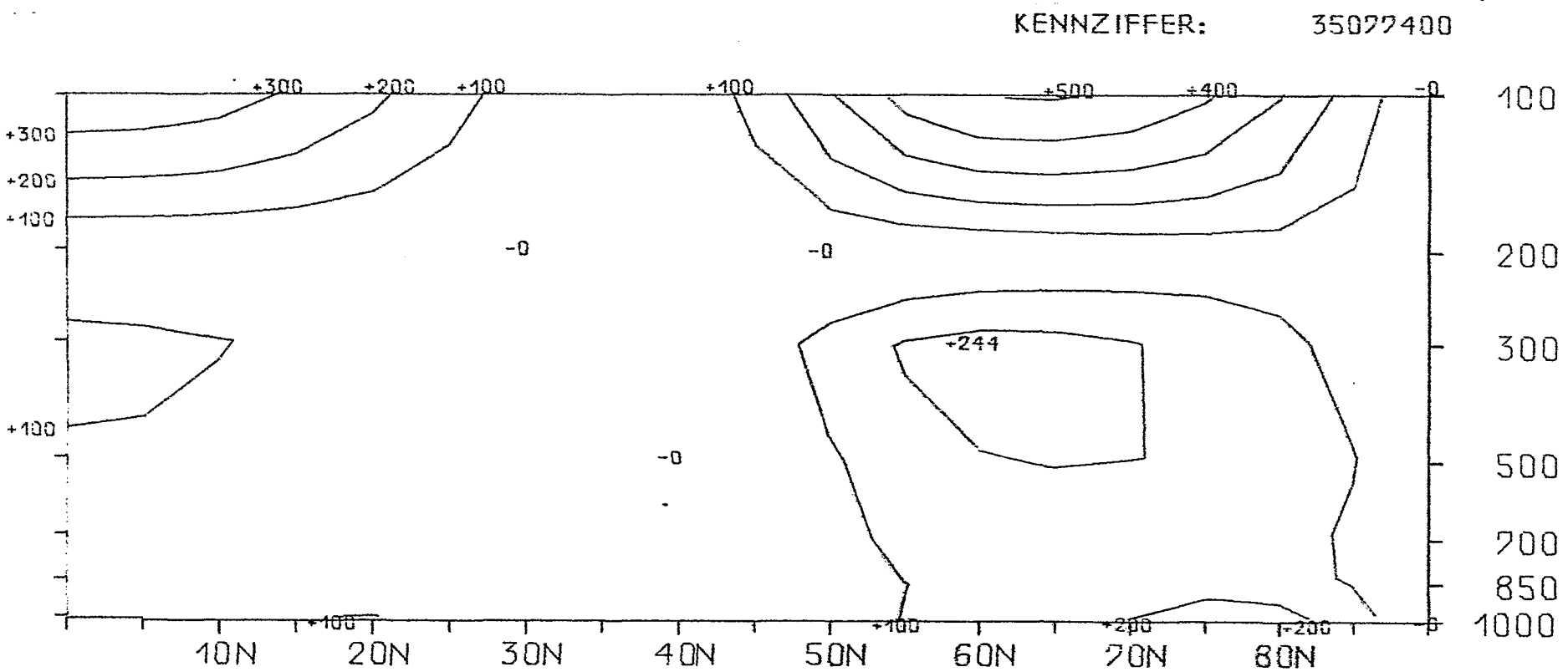

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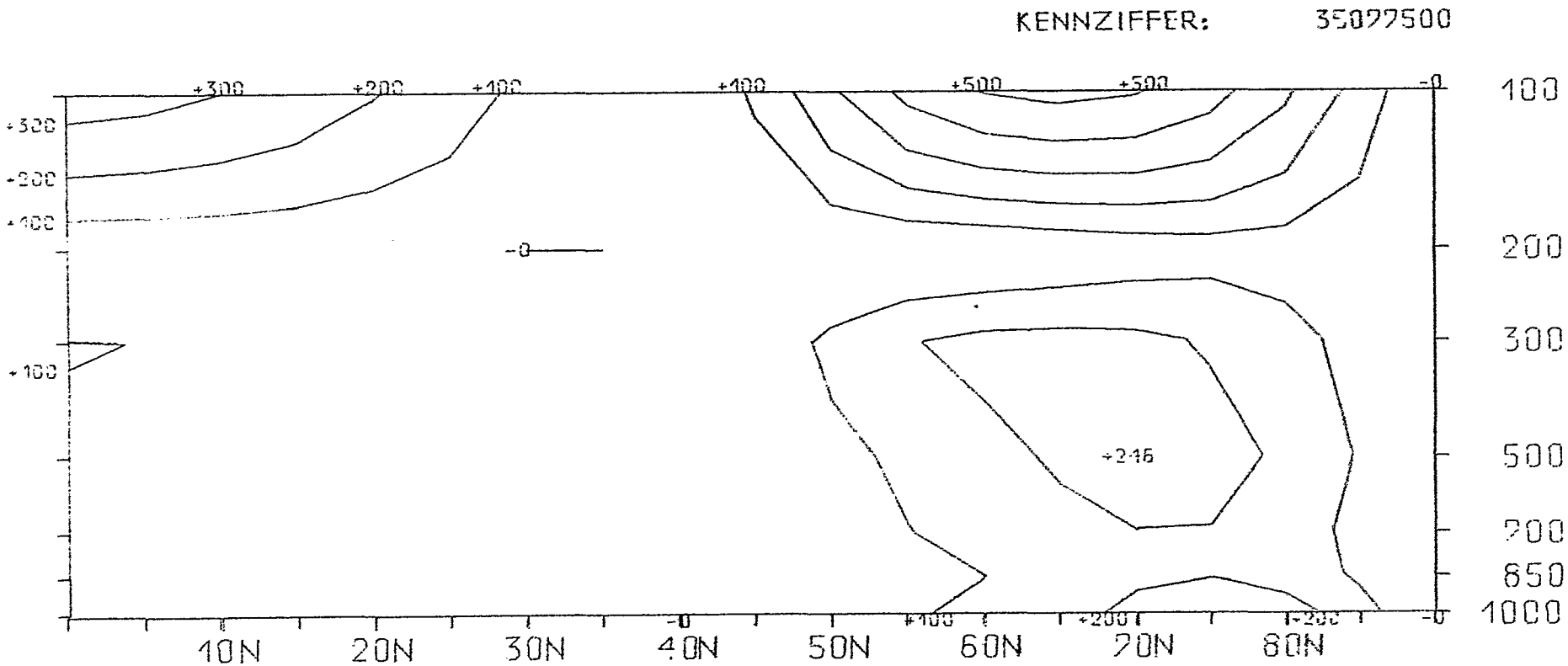

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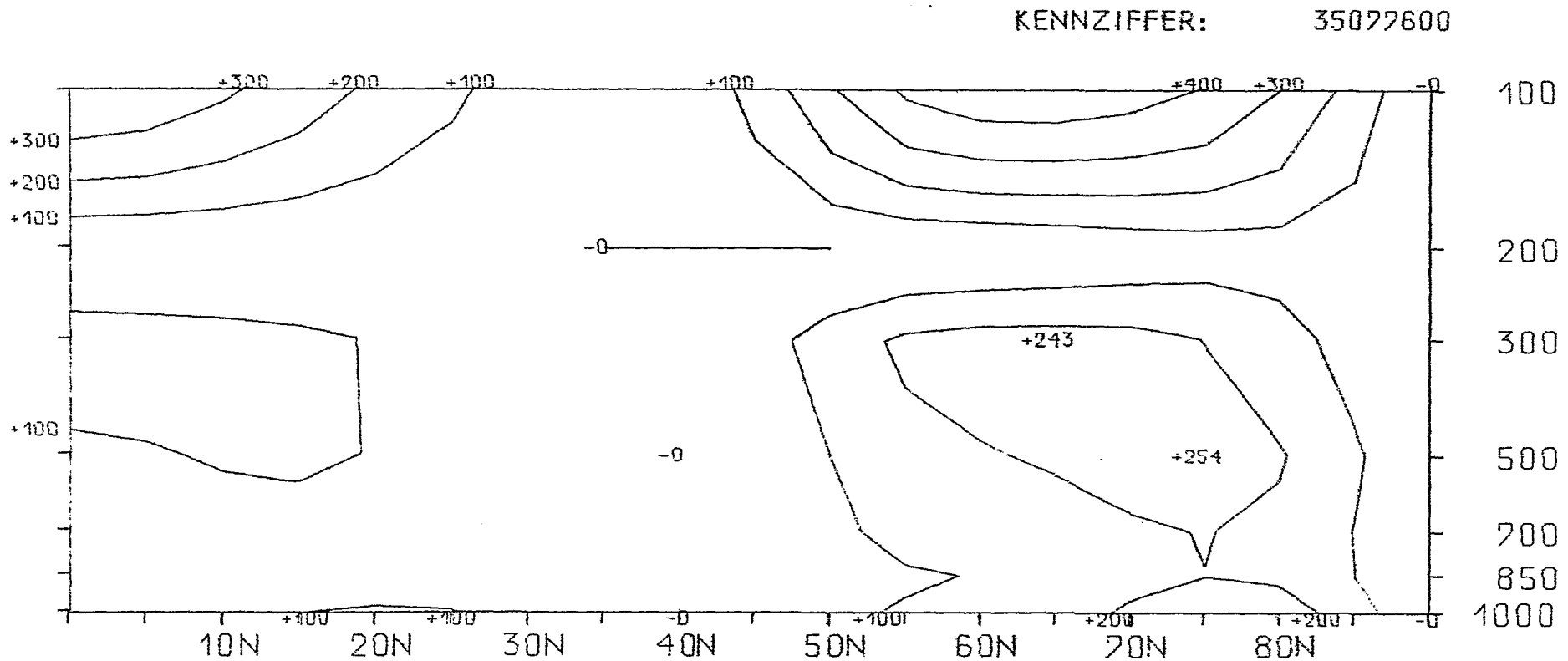
A MMC

Abb.7



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A MMC

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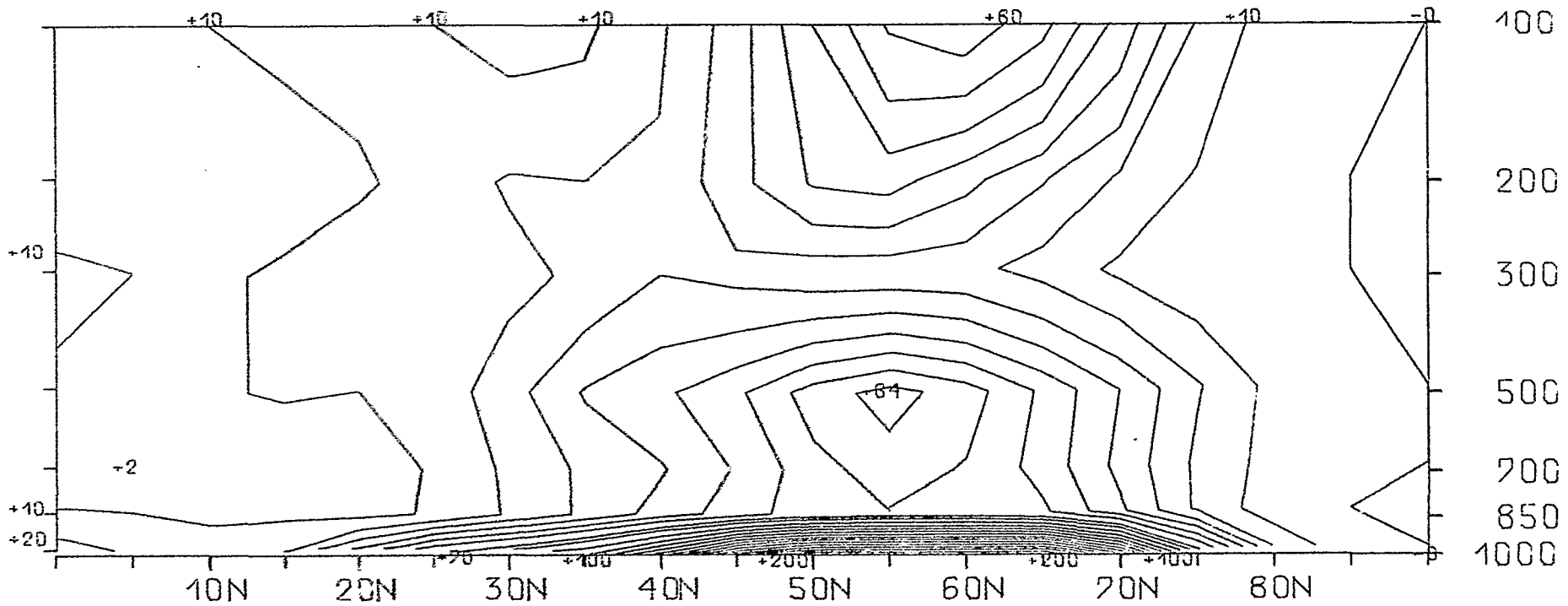

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MSE, 1 - 15

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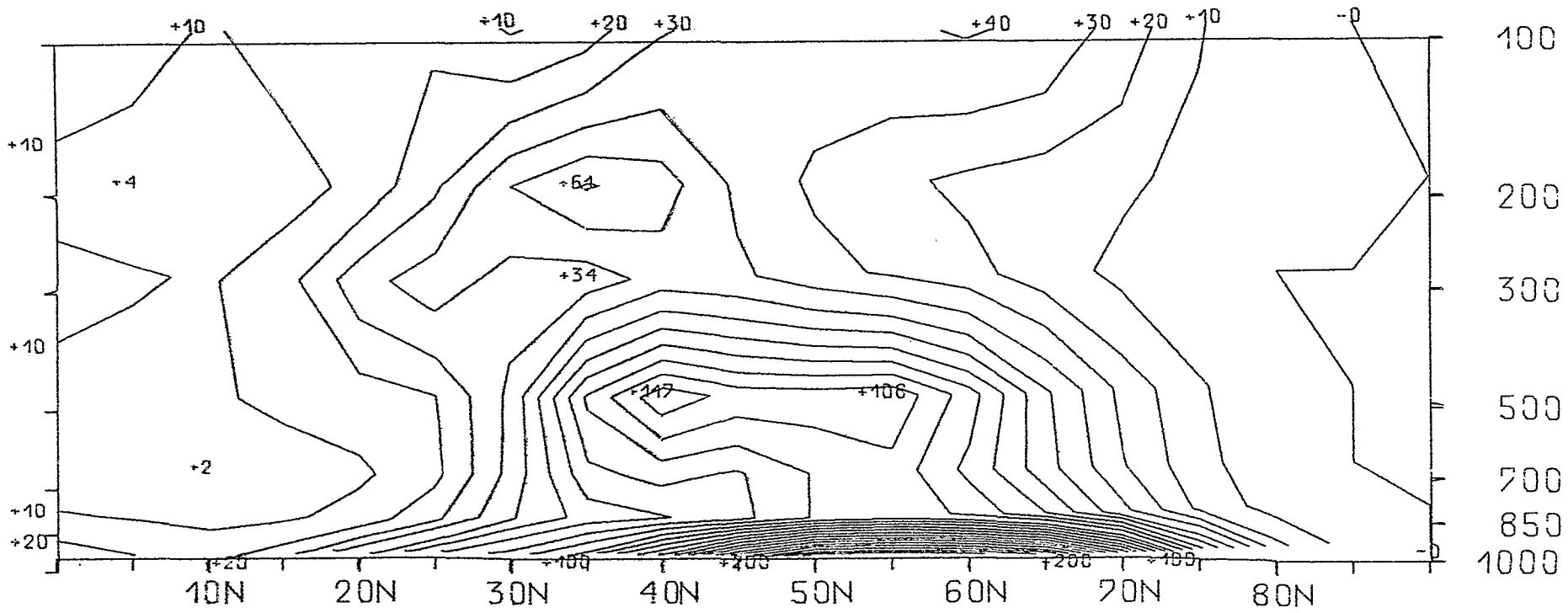

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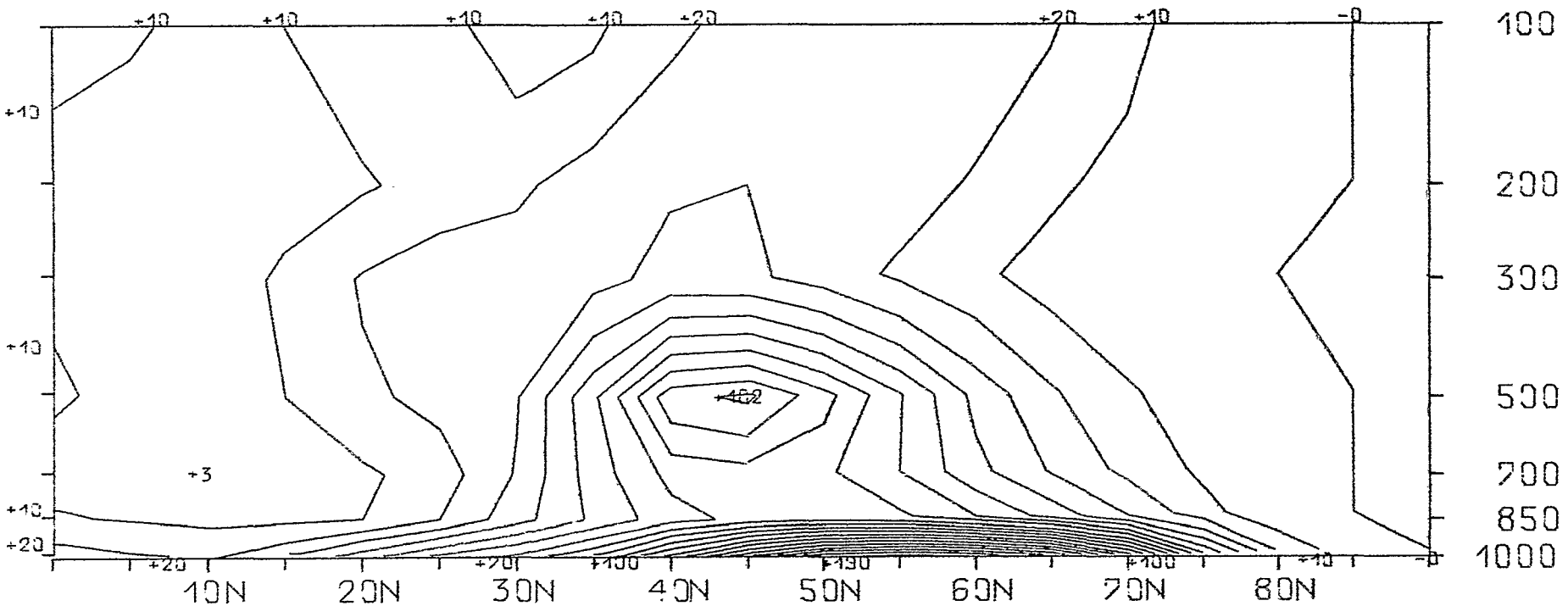

A MSE: 1 - 15

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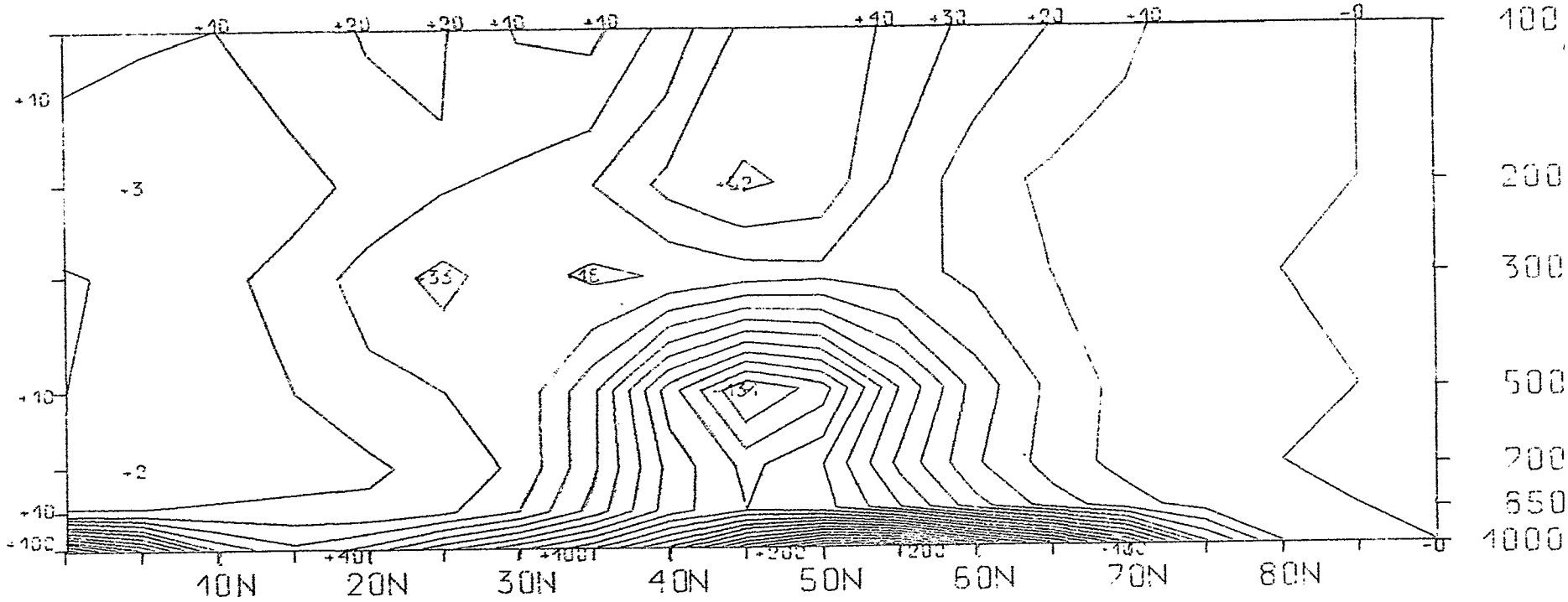

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A MSE. 1 - 15

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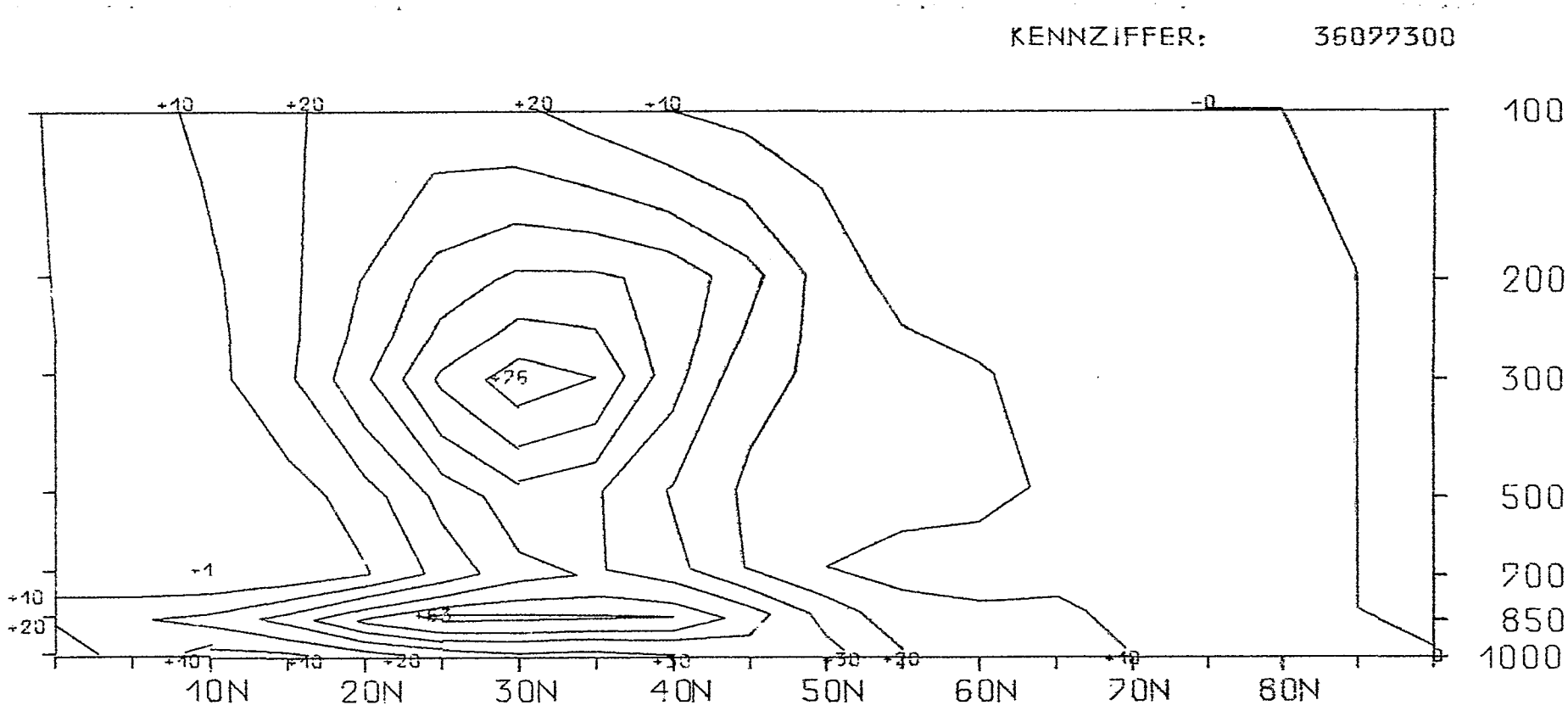

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A MSE, 1 - 15

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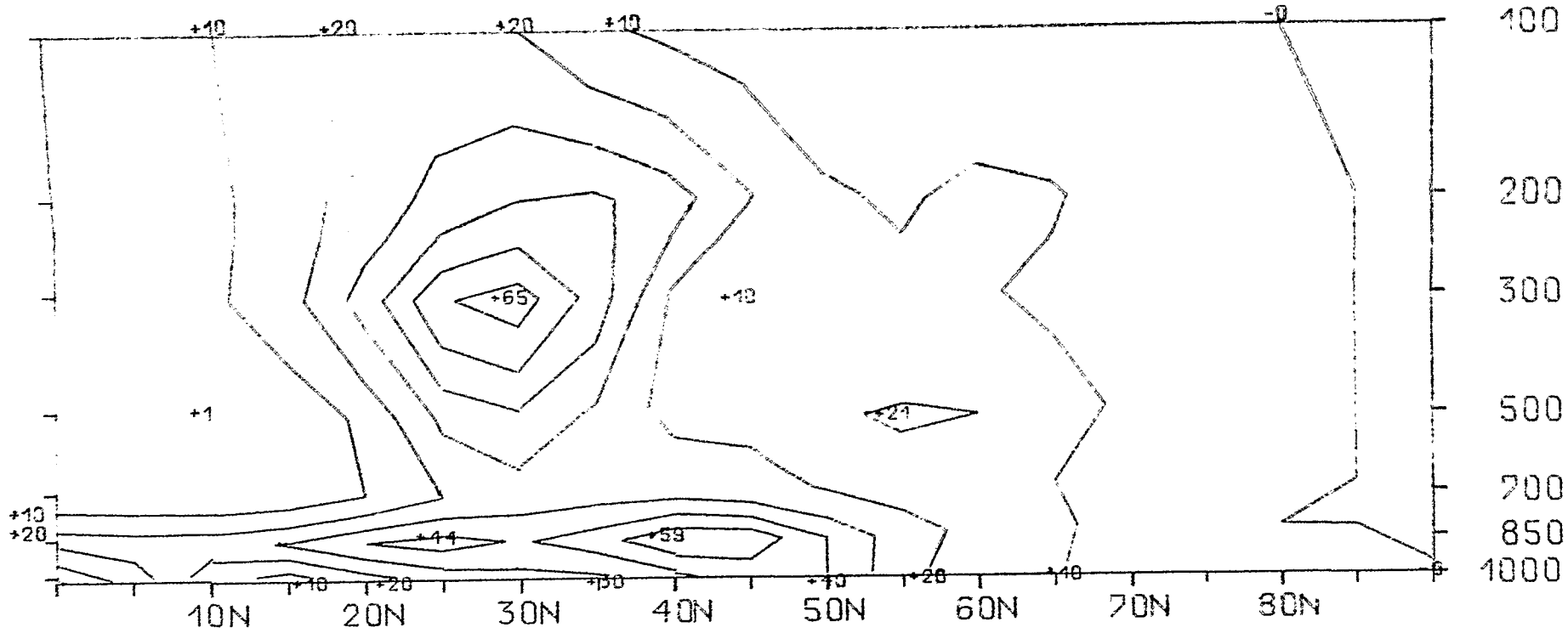
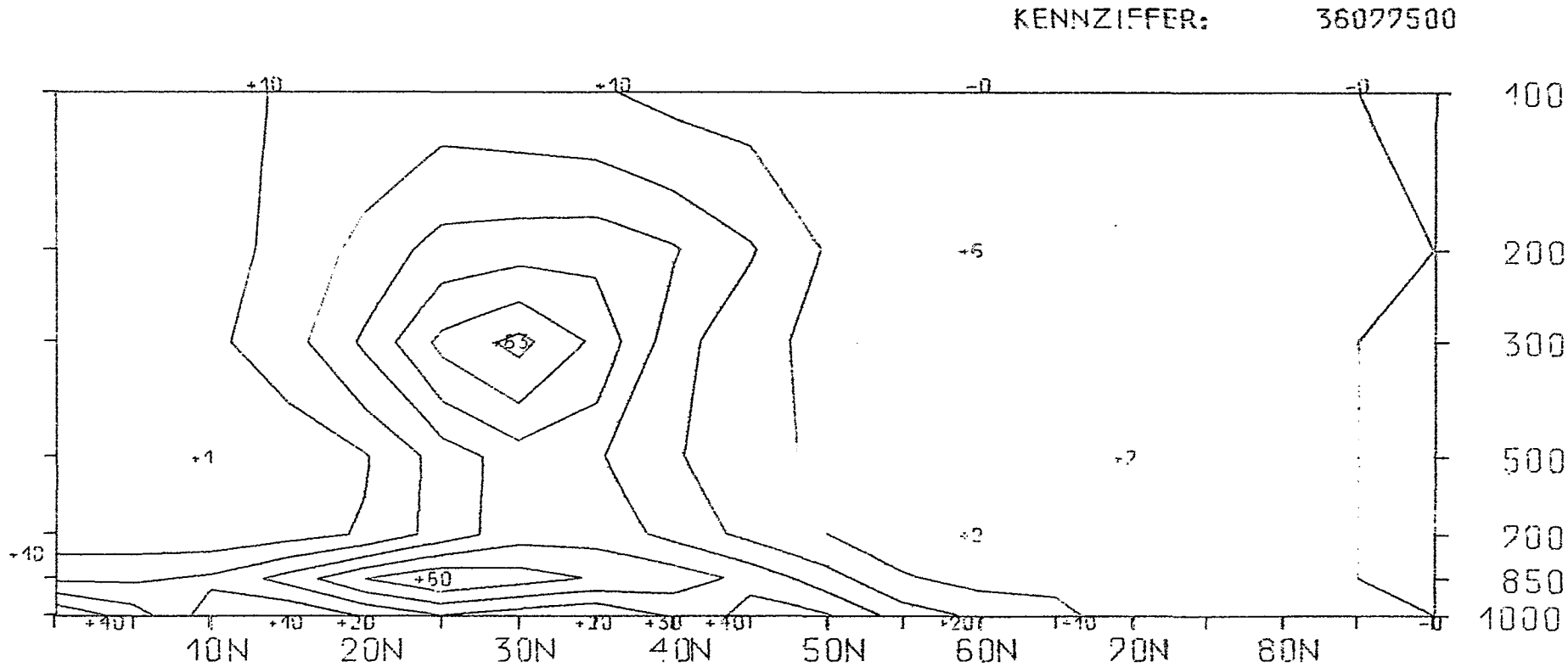


10^{-3} J CM^{-2} MB^{-1} JULY 74

A MSE, 1 - 15

/ bb 14



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A
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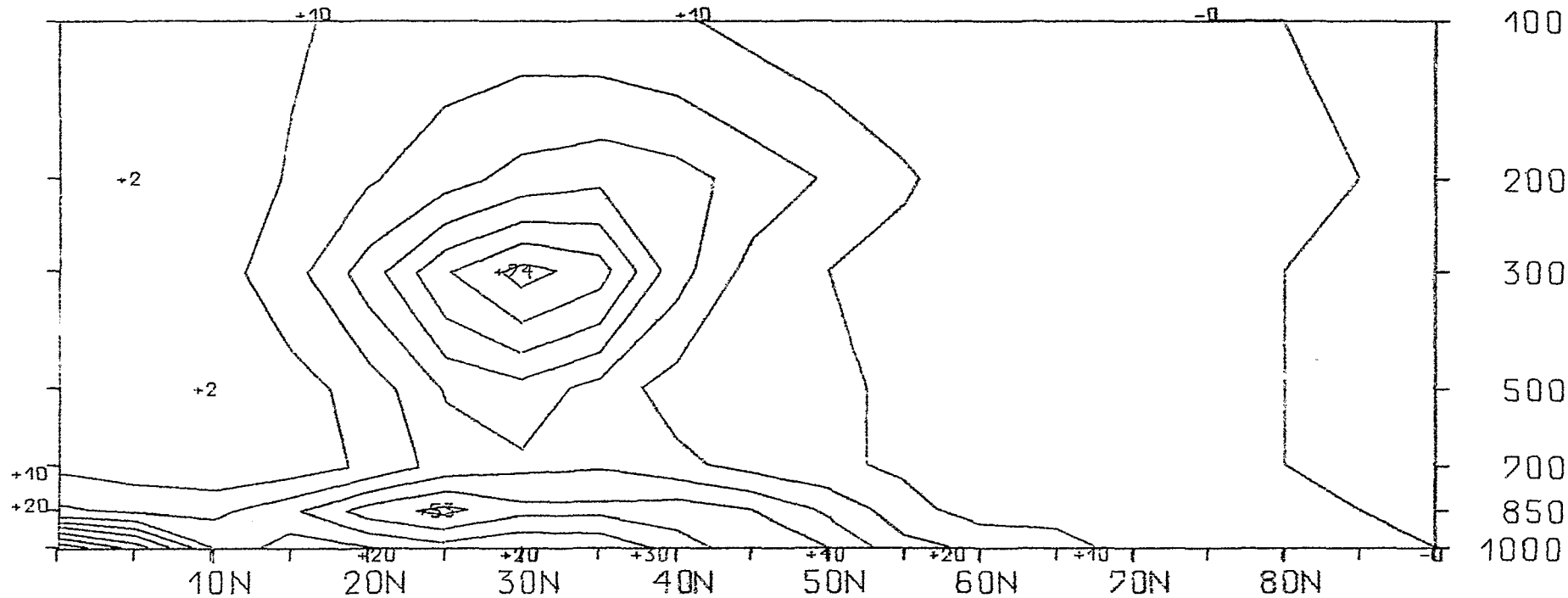

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A MSE, 1 - 15

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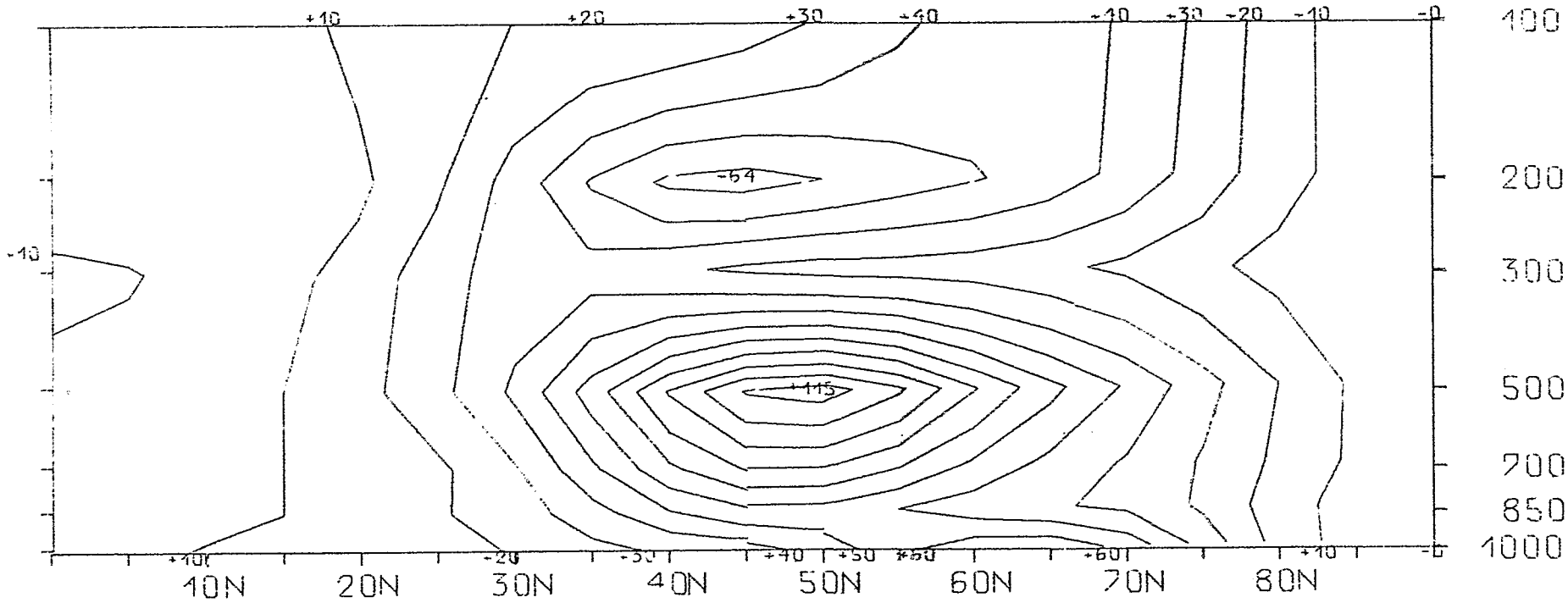

A_{TE}

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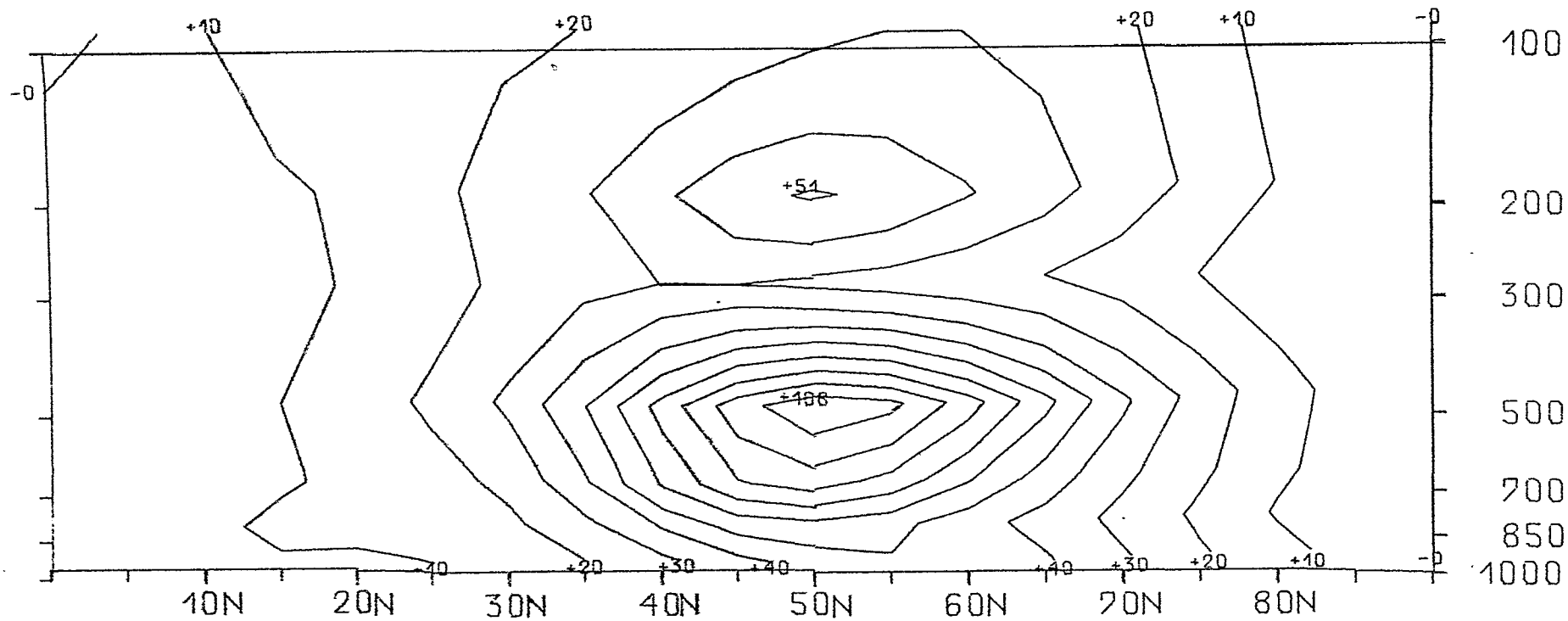

A_{TE} **10^{-3} J CM^{-2} MB^{-1}** JAN. 74

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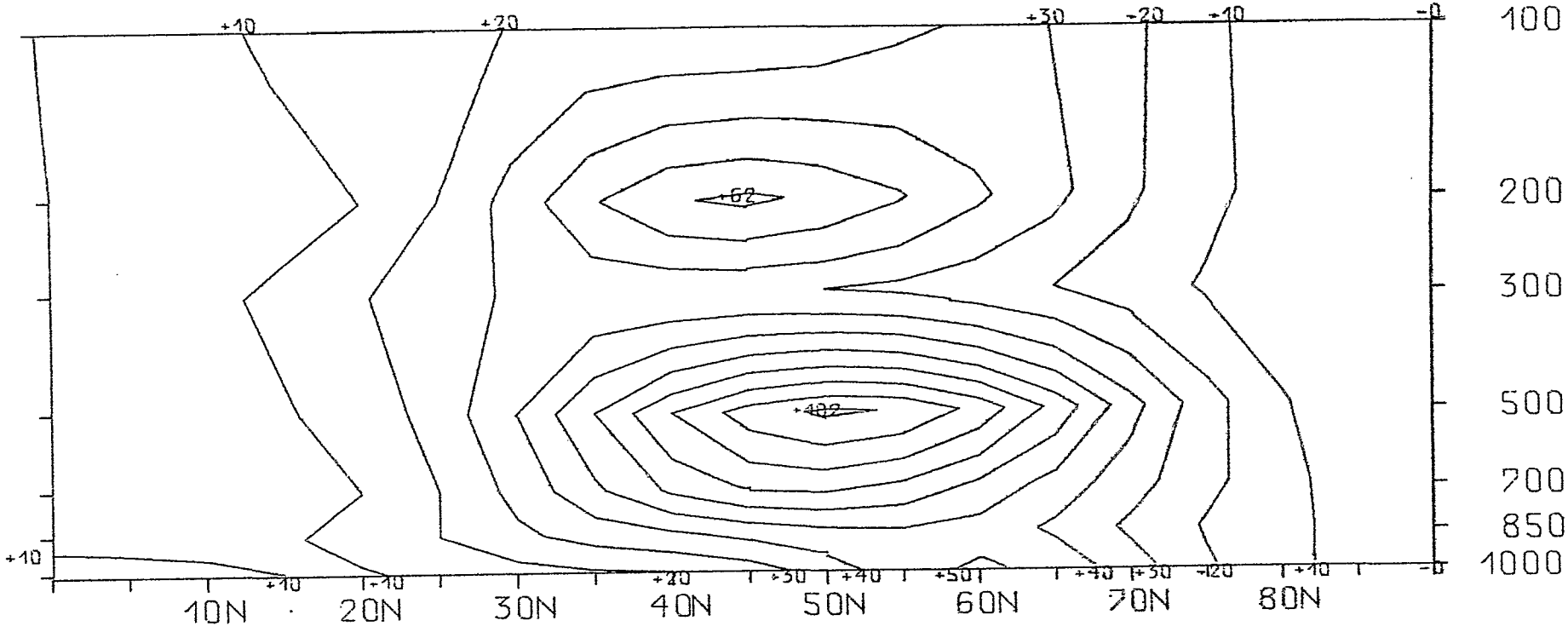

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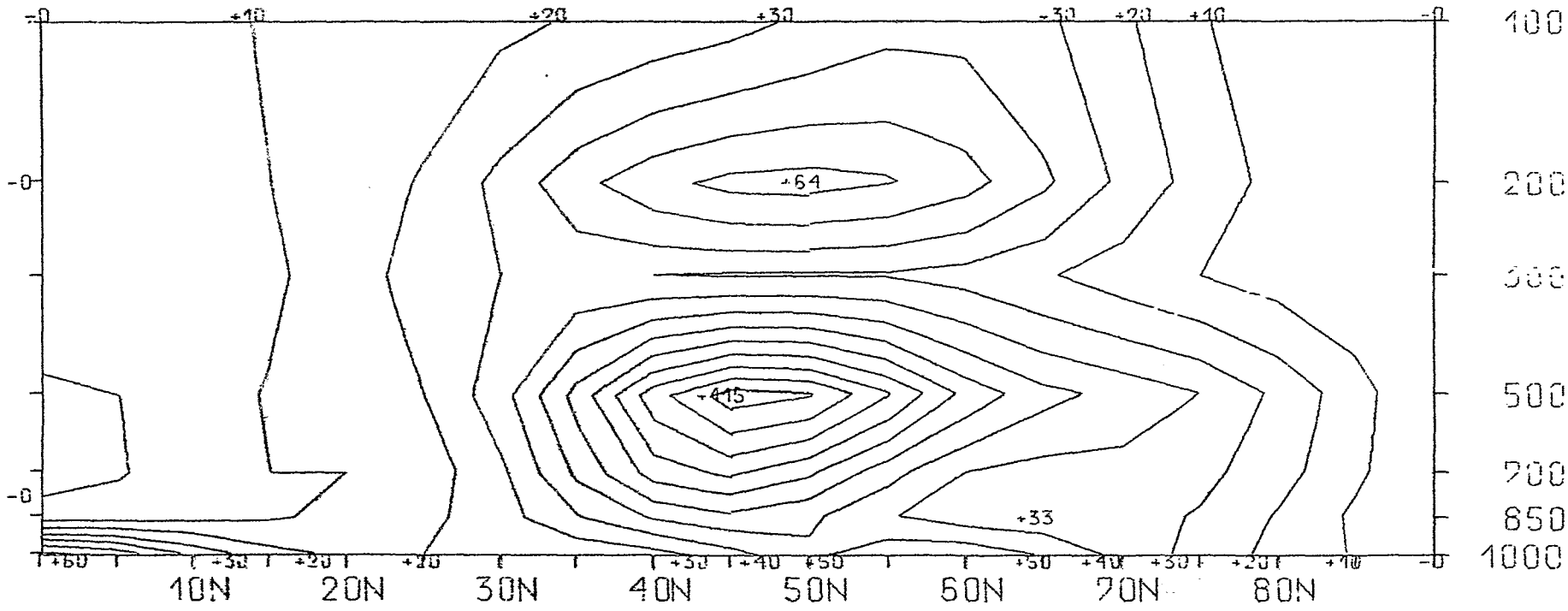
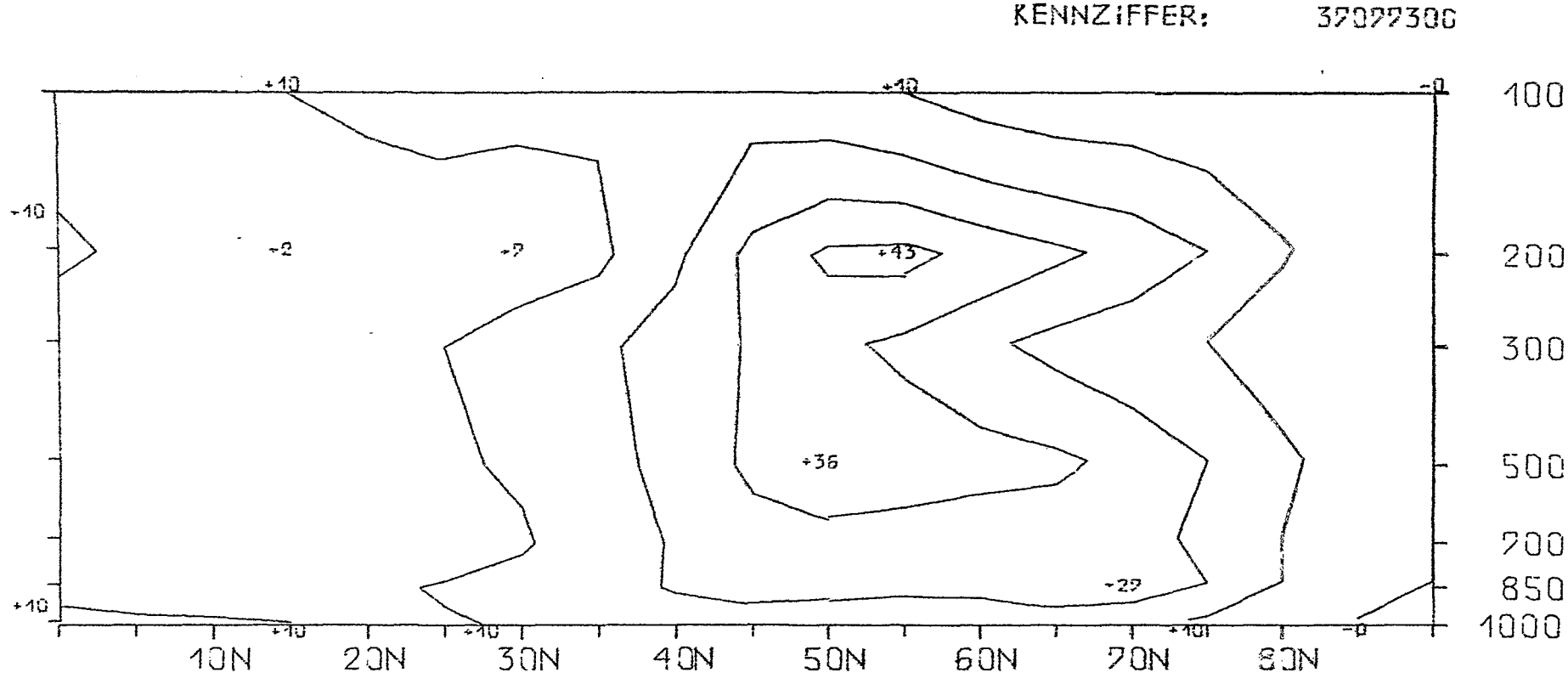


A_{TE} 10^{-3} J CM^{-2} MB^{-1} JAN.76

Abb. 20



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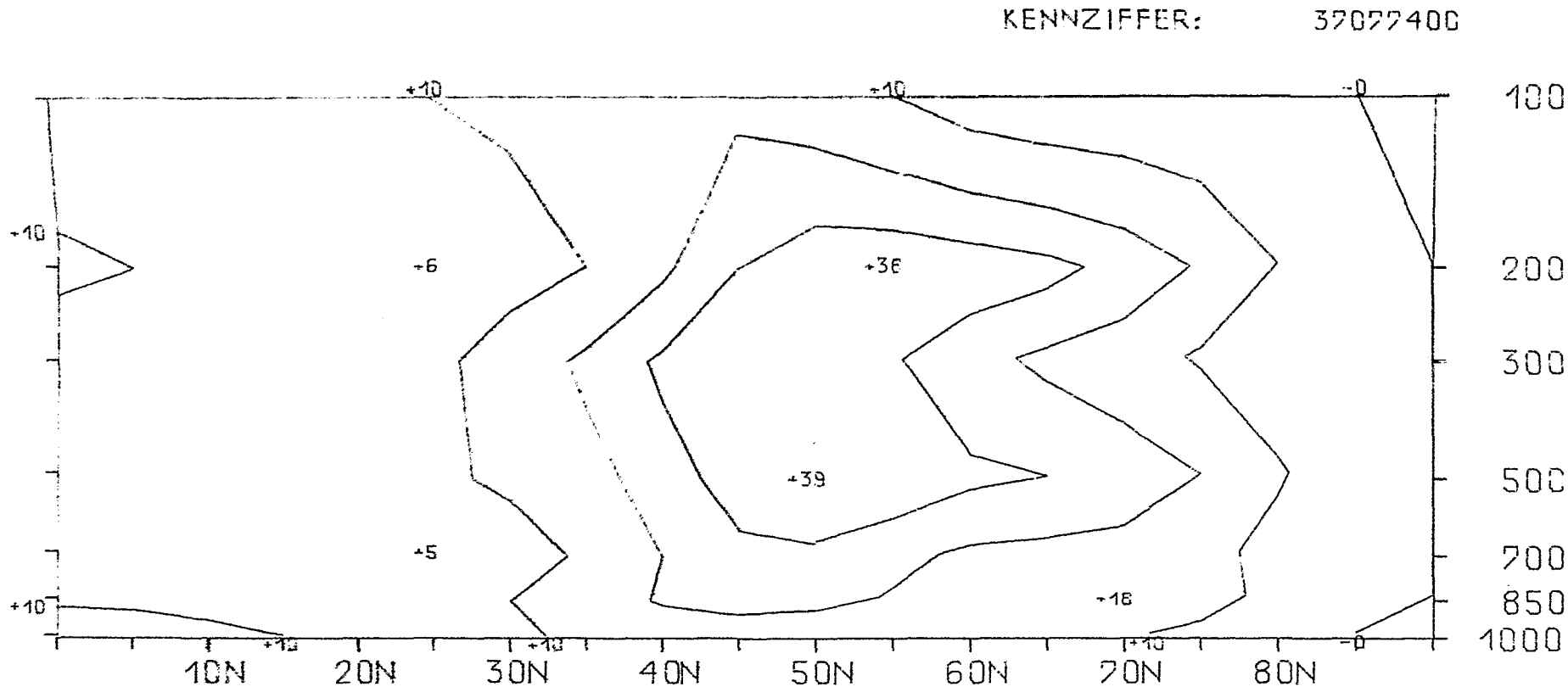

A_{TE}

10^{-3} J CM^{-2} MB^{-1} JULY 74

Abb 22

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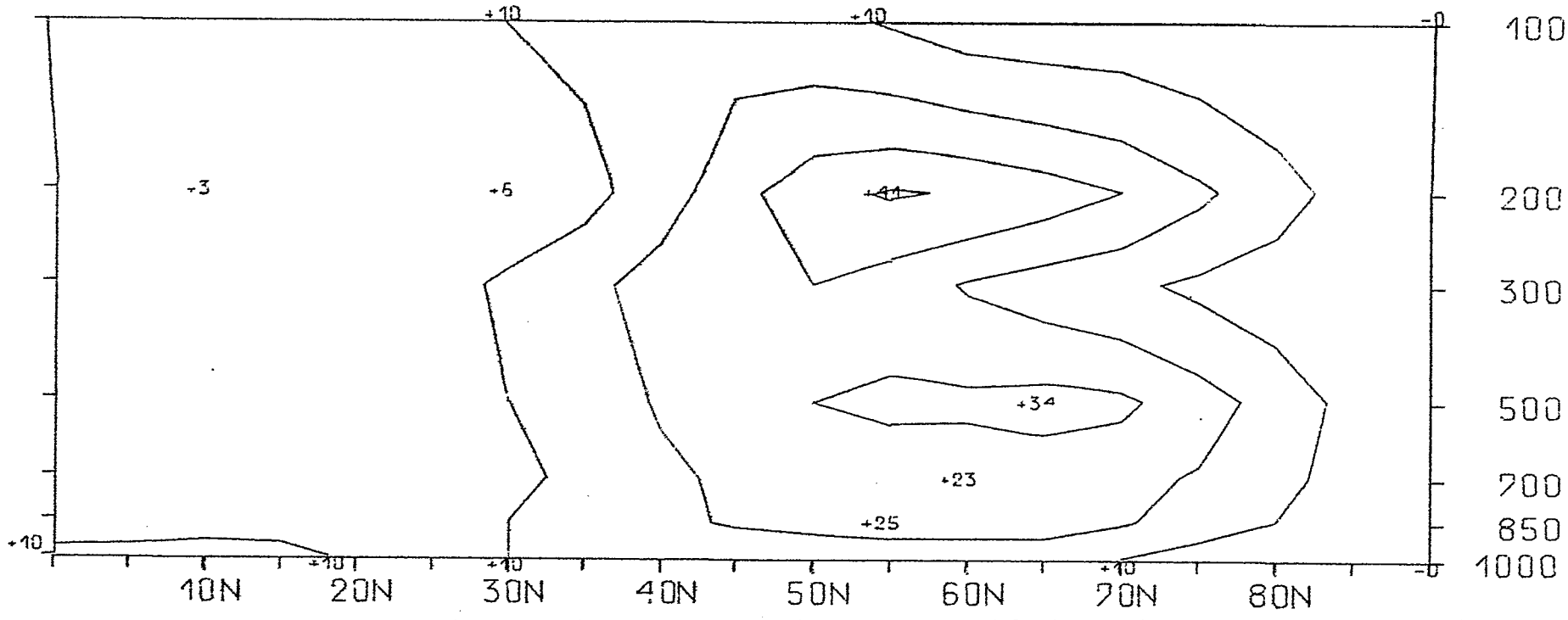
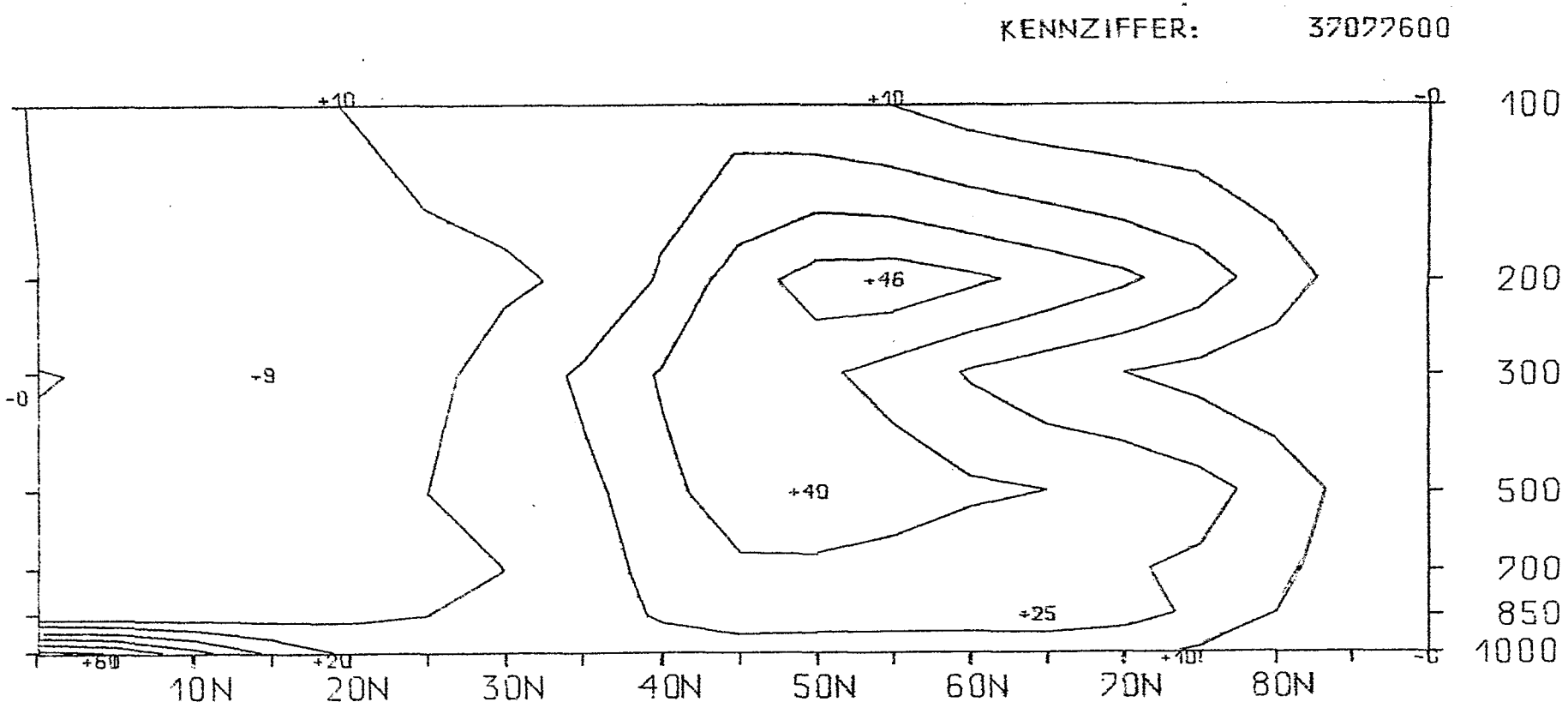


A_{TE} **10^{-3} J CM^{-2} MB^{-1}** JULY 75

Abb 23



10^{-3} J CM^{-2} MB^{-1} JULY 76

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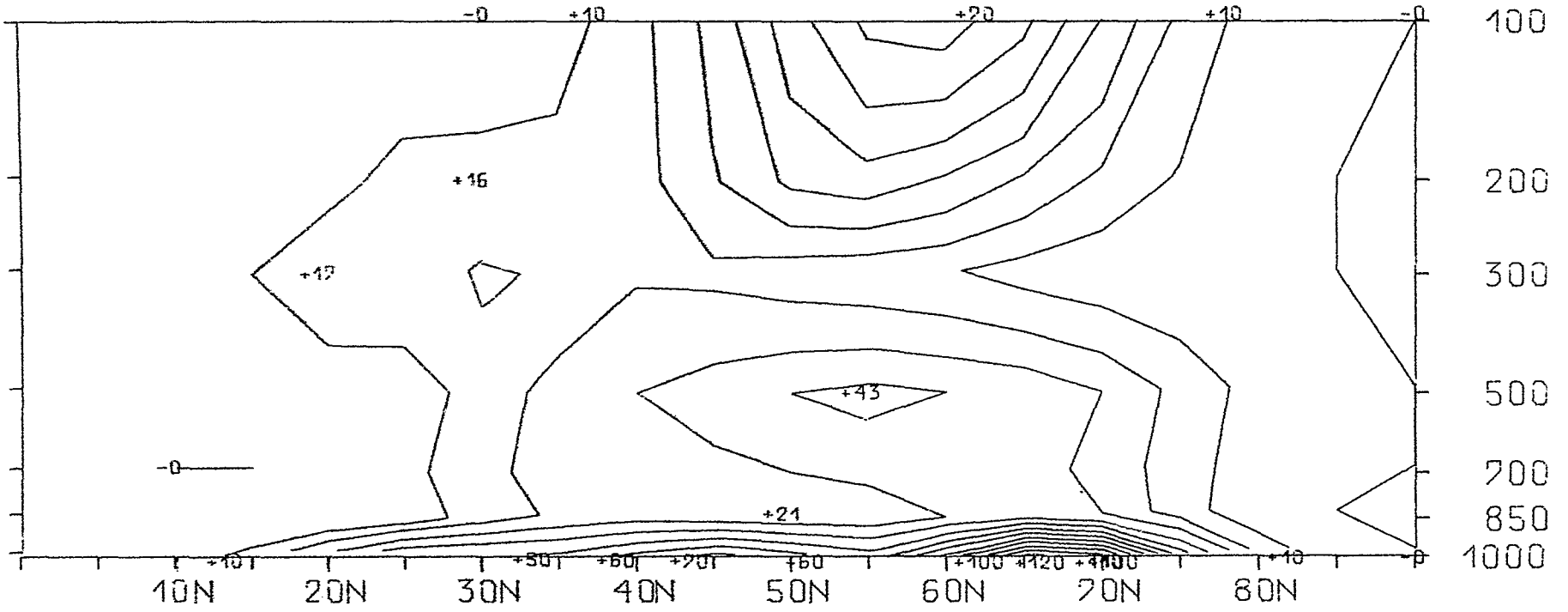

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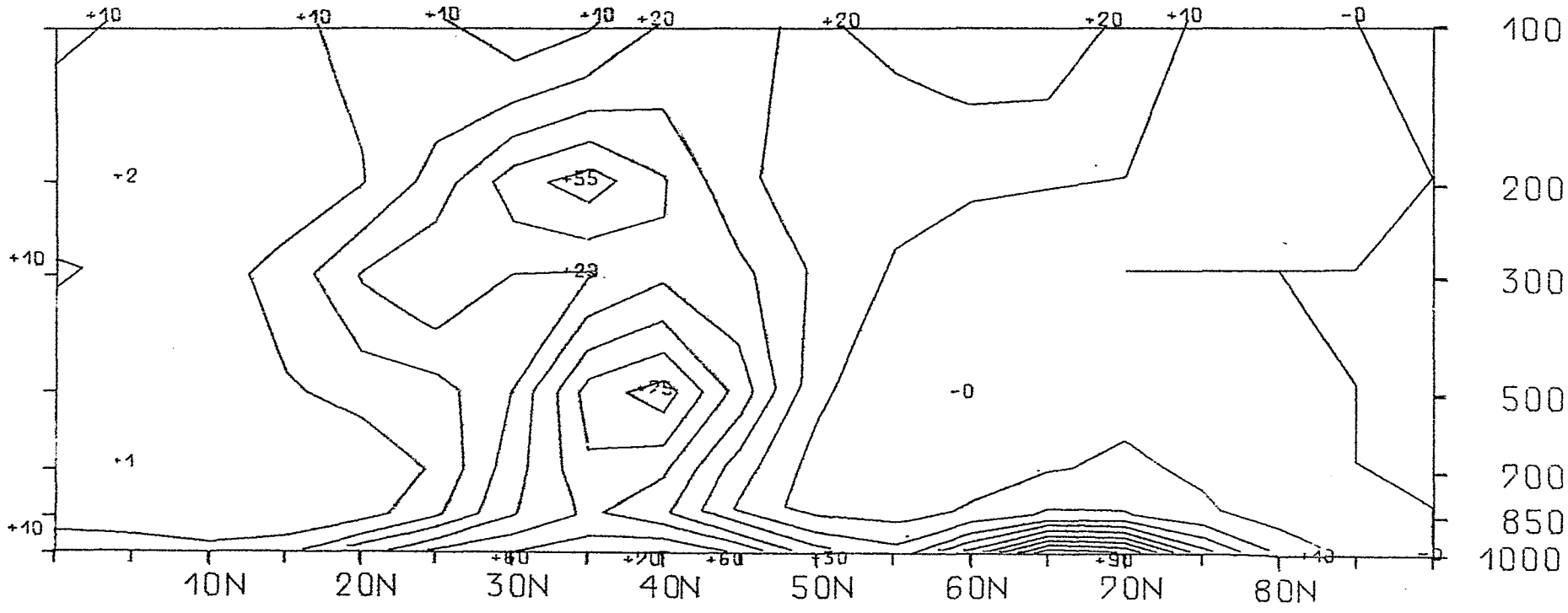

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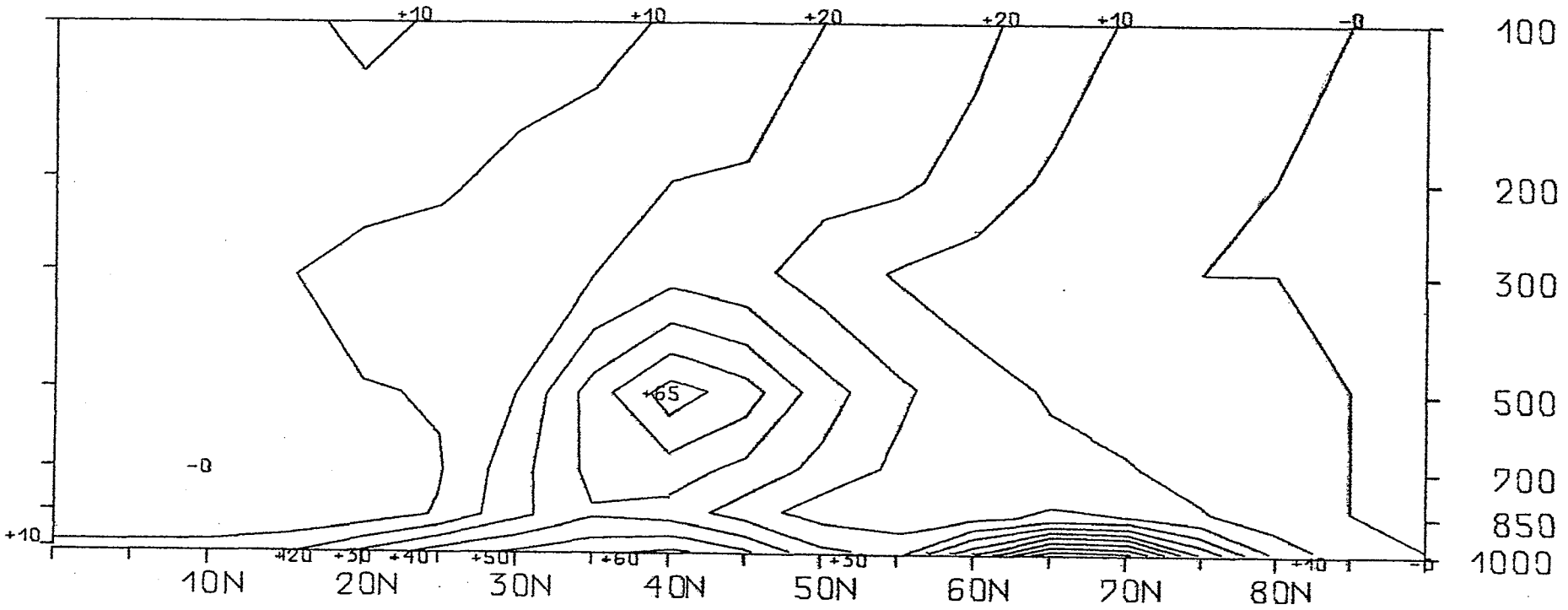

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Abb 27

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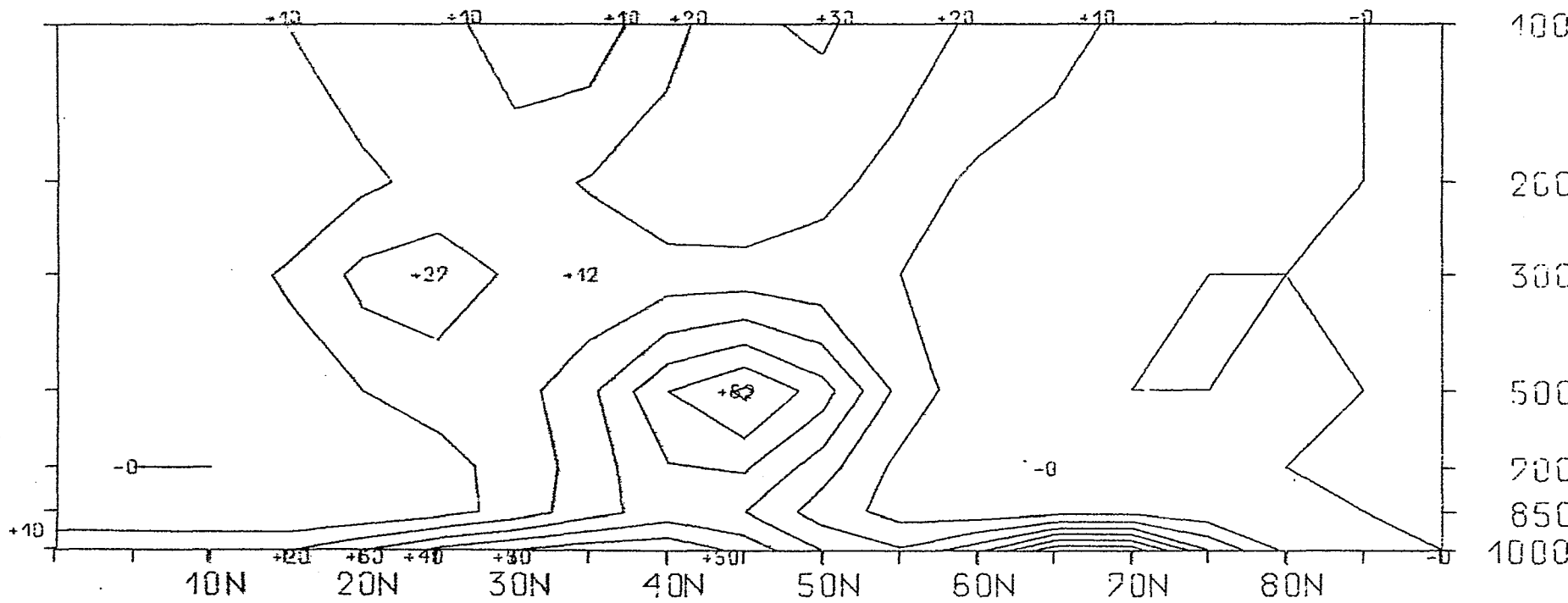
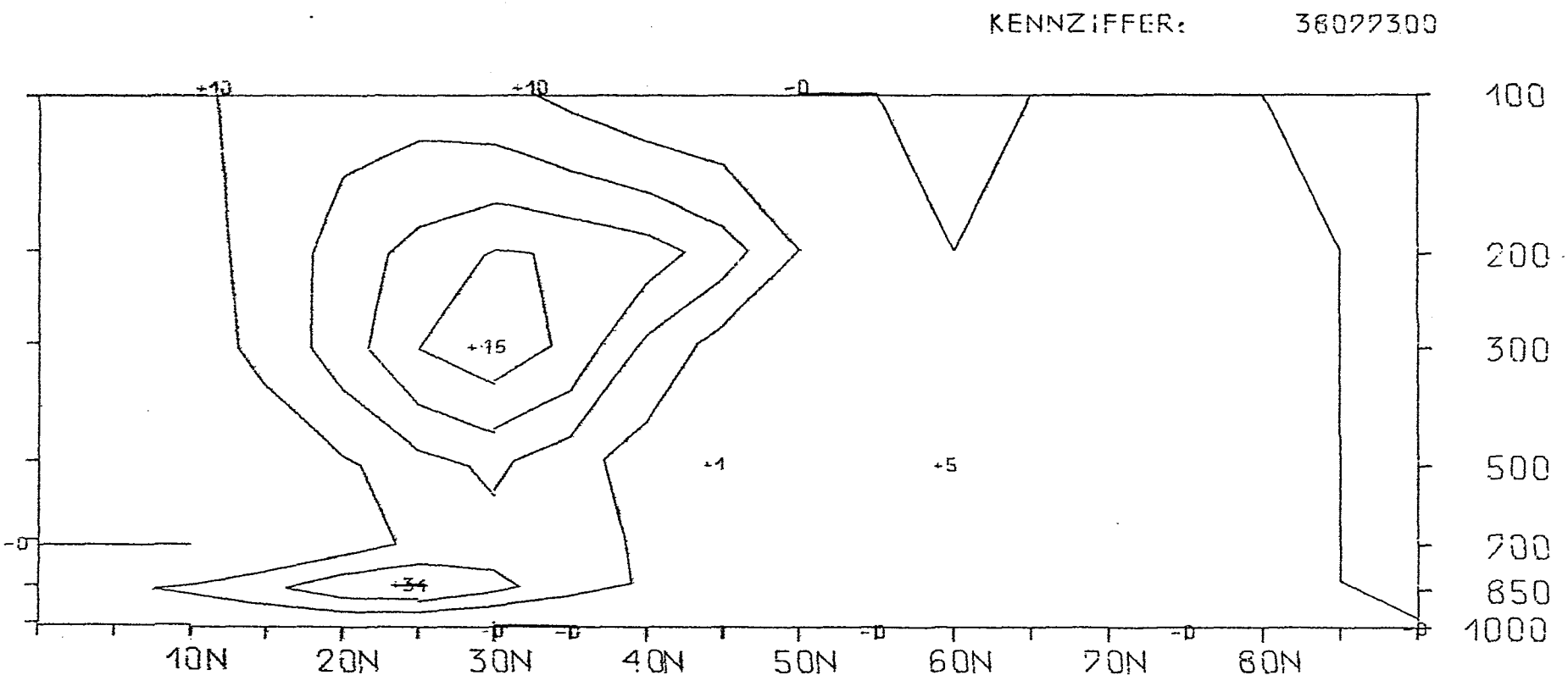


10^{-3} J CM^{-2} MB^{-1} JAN. 76

A MSG: 1

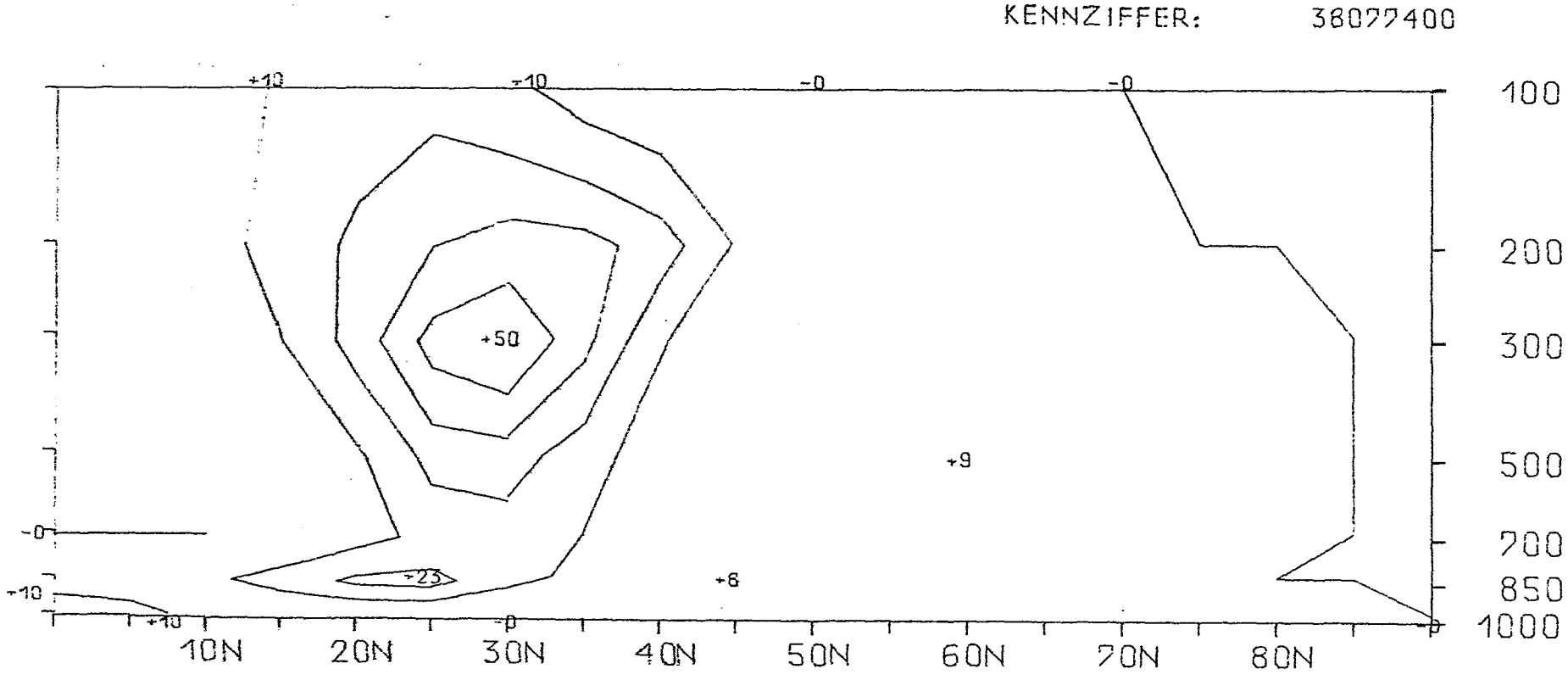
Abb. 28



A MSE, 1

10^{-3} J CM^{-2} MB^{-1} JULY 73

Abb. 29



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10^{-3} J CM^{-2} MB^{-1} JULY 74

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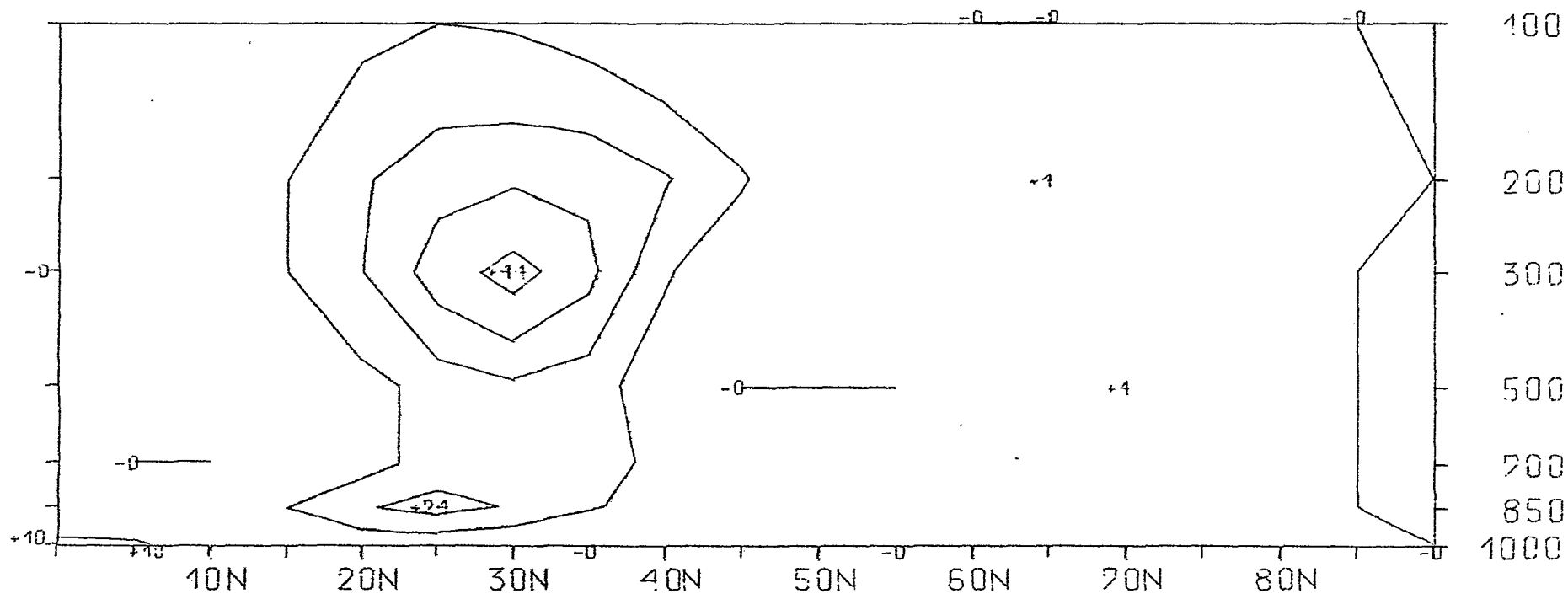

10^{-3} J CM^{-2} MB^{-1} JULY 75

A

MSC. 1

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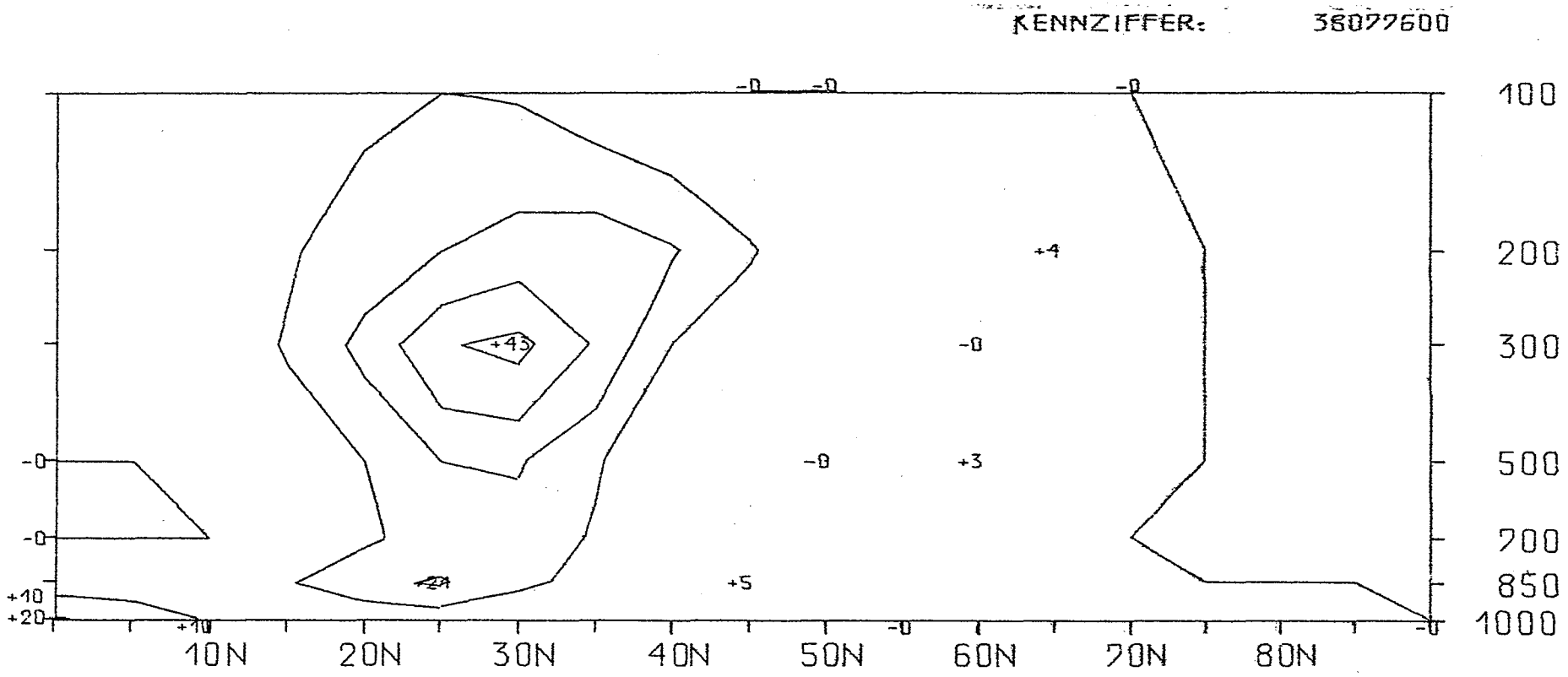

10^{-3} J CM^{-2} MB^{-1} JULY 76

A
MSE, 1

Abb.32

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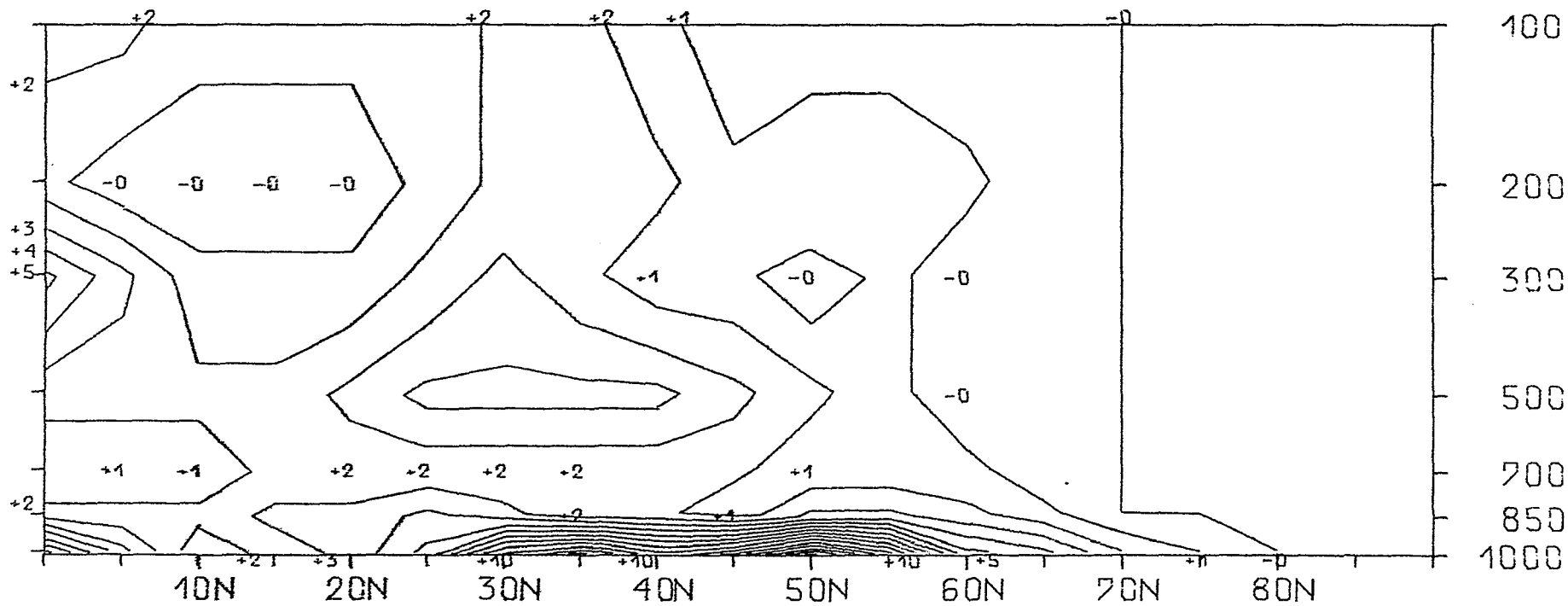

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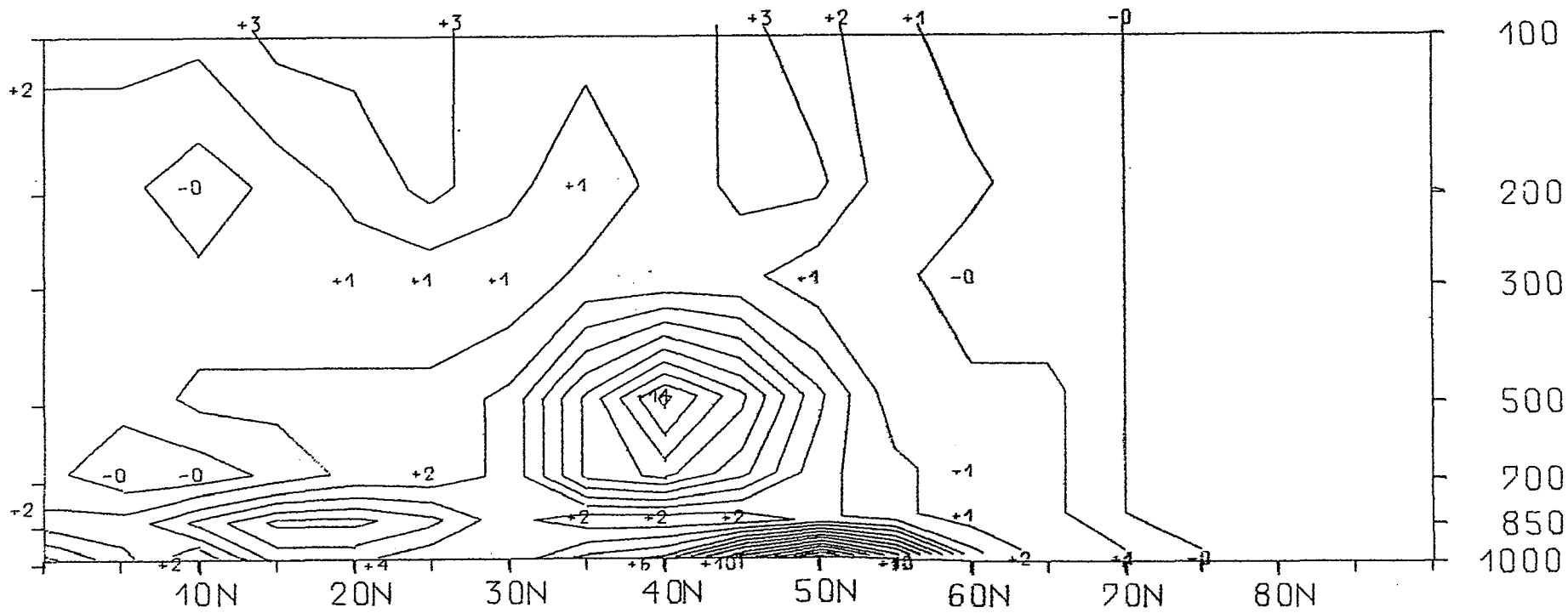

10^{-3} J CM^{-2} MB^{-1} JAN. 74

A
MSE, 4 - 6

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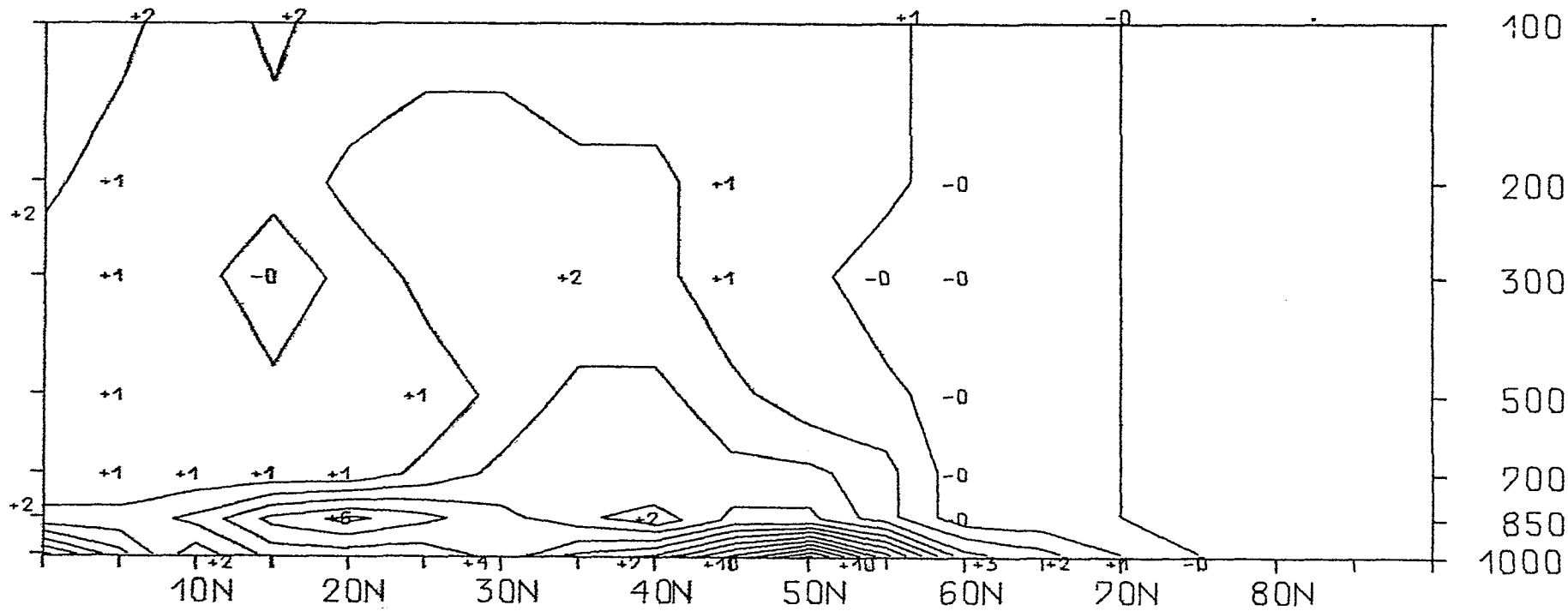

A MSE, 4 - 8

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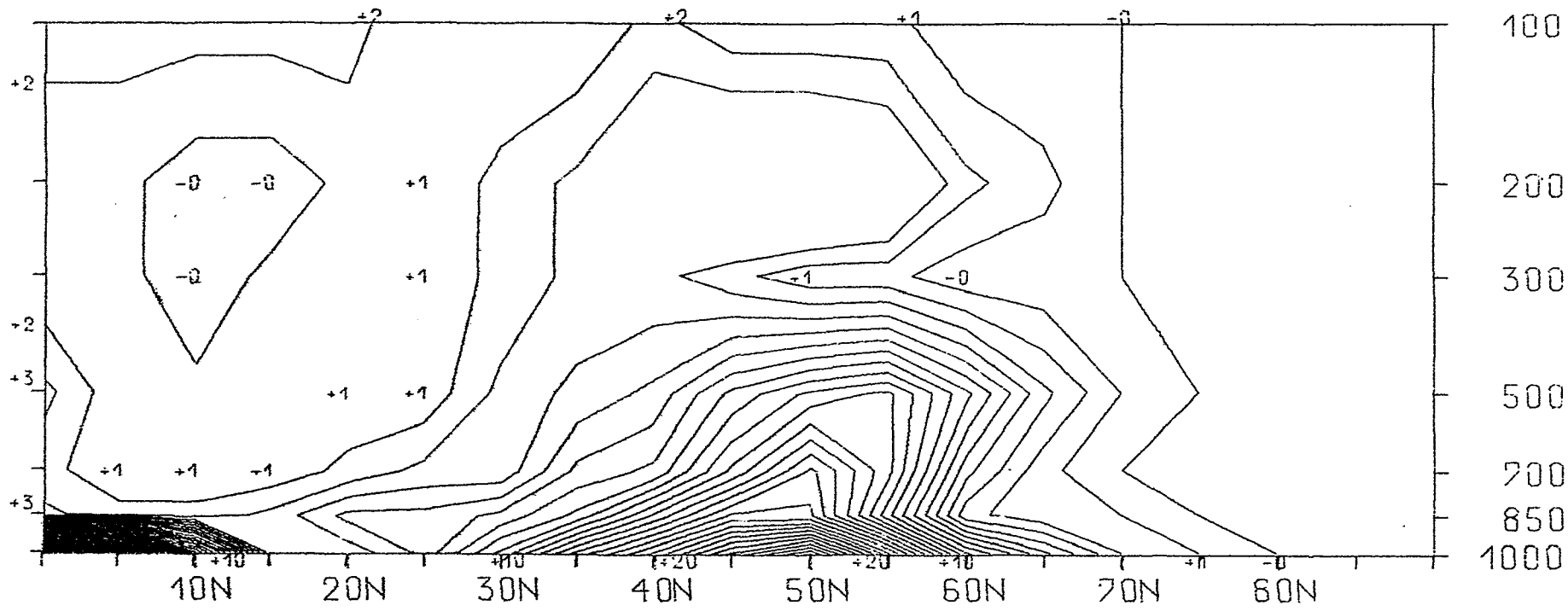

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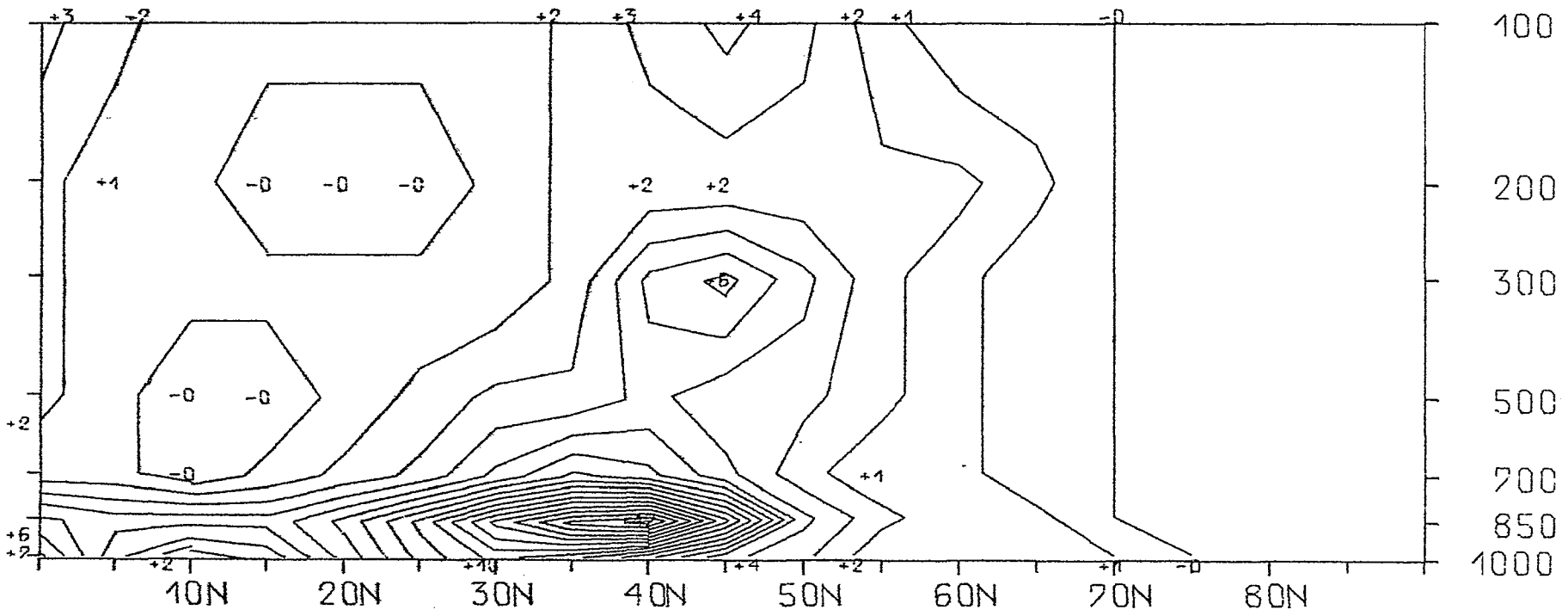

10^{-3} J CM^{-2} MB^{-1} JULY 73

A MSE, 4 - 6

Abb. 37

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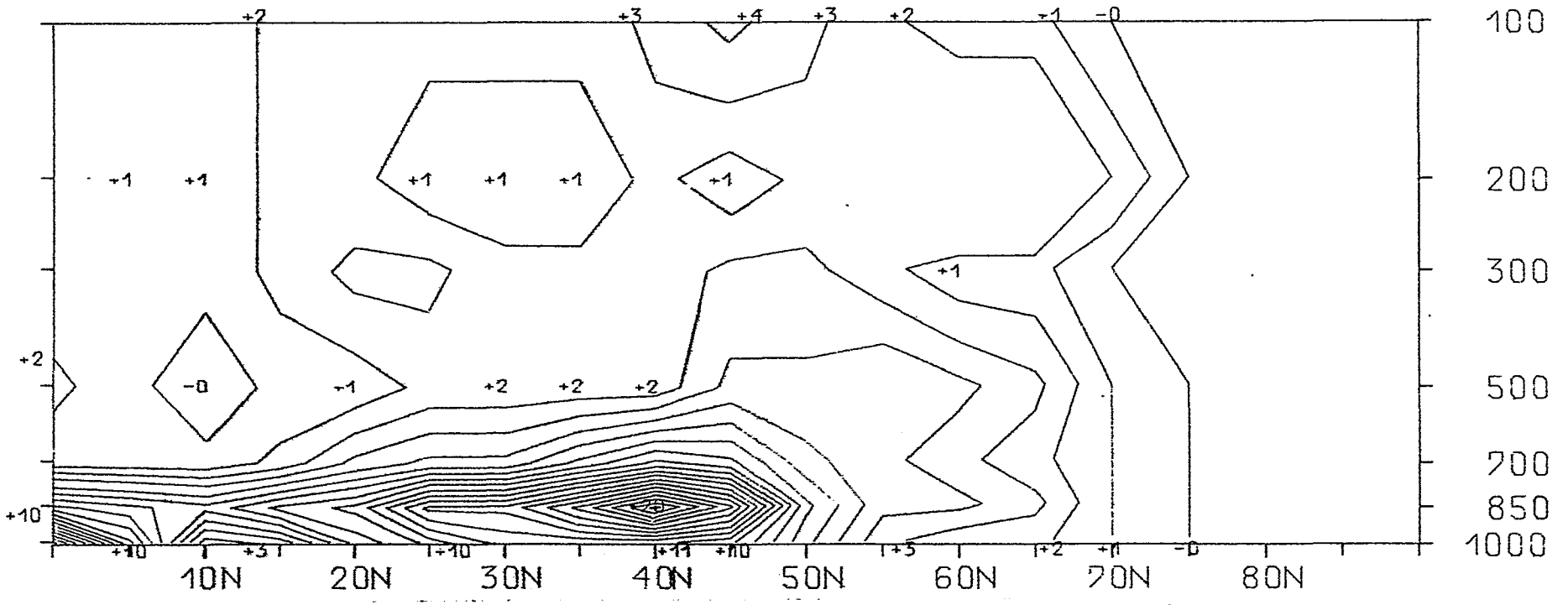

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A MSE, 4 - 8

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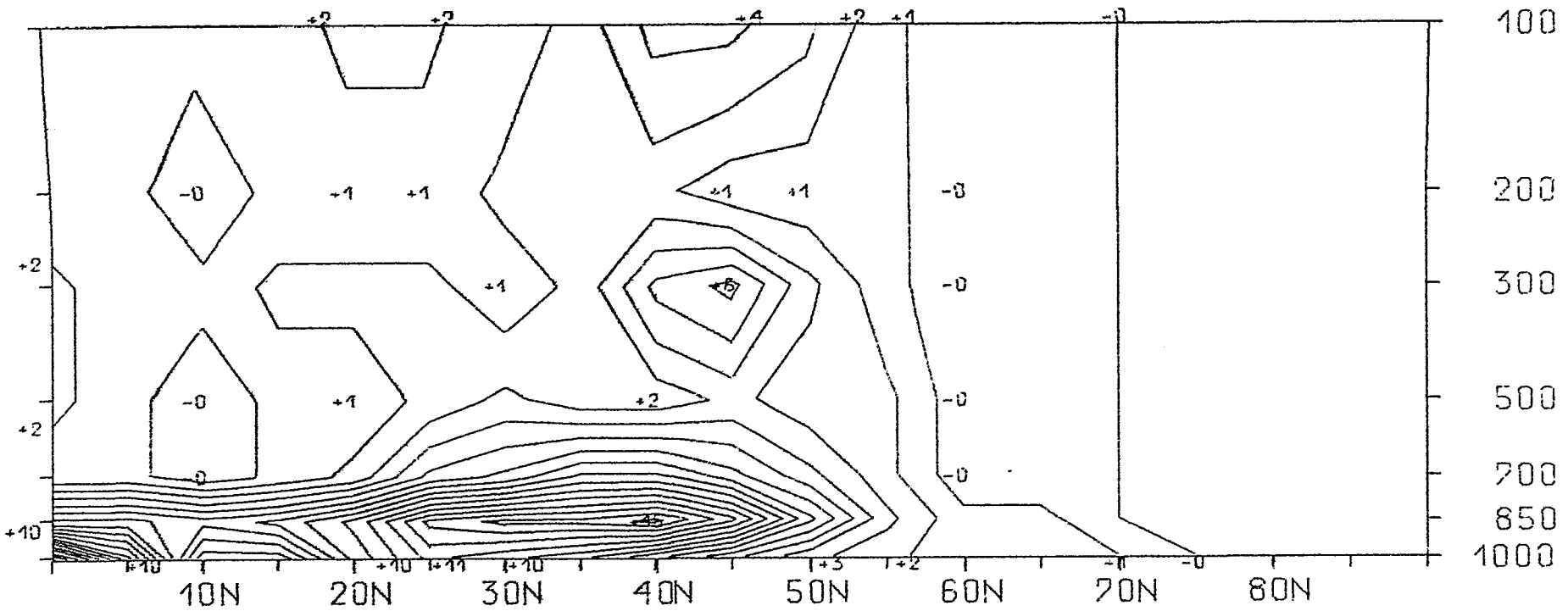

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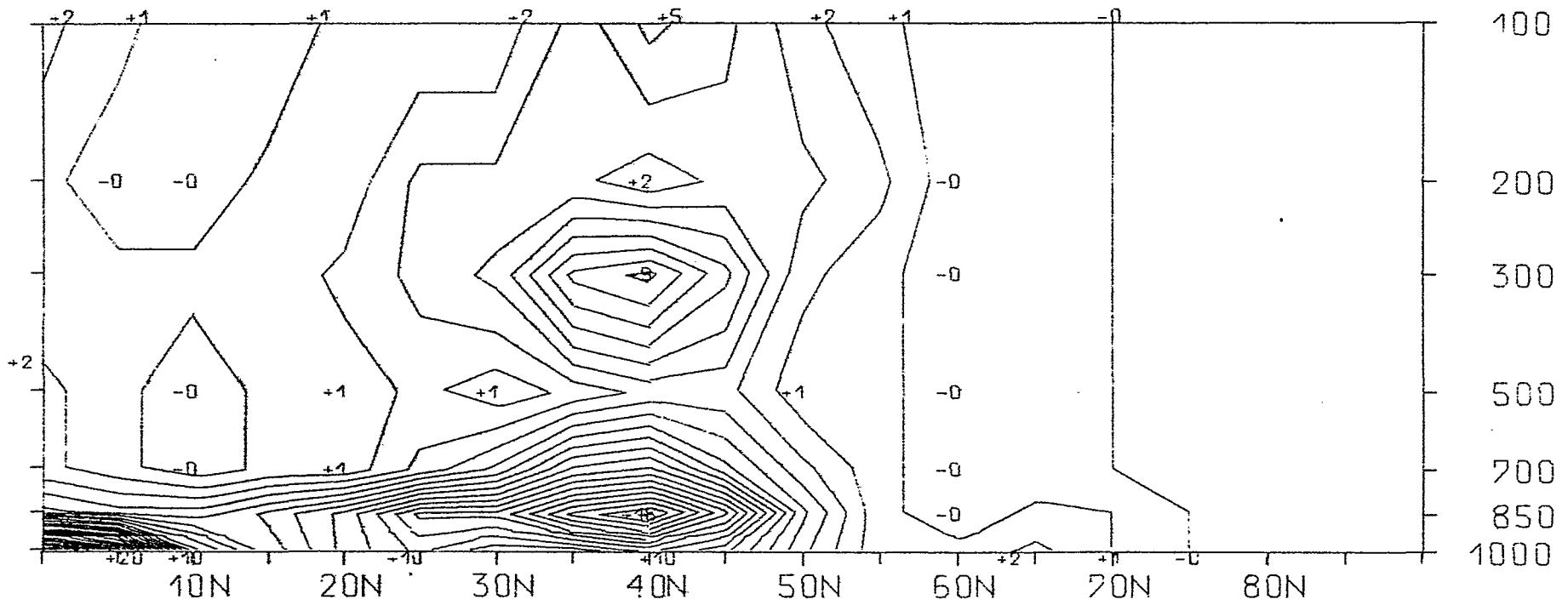

10^{-3} J CM^{-2} MB^{-1} JULY 76

A

MSE. 4 - 8

Abb. 40

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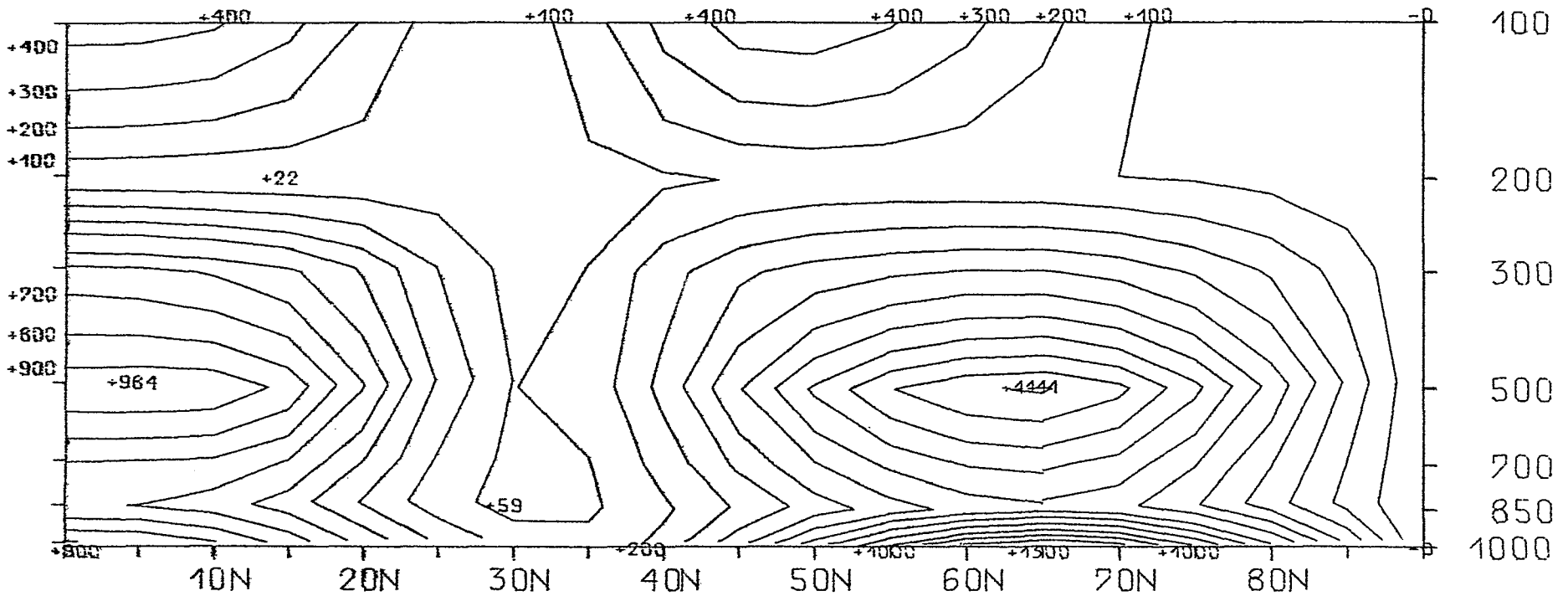

A_{TOC} **10^{-3} J CM^{-2} MB^{-1}** JAN. 73

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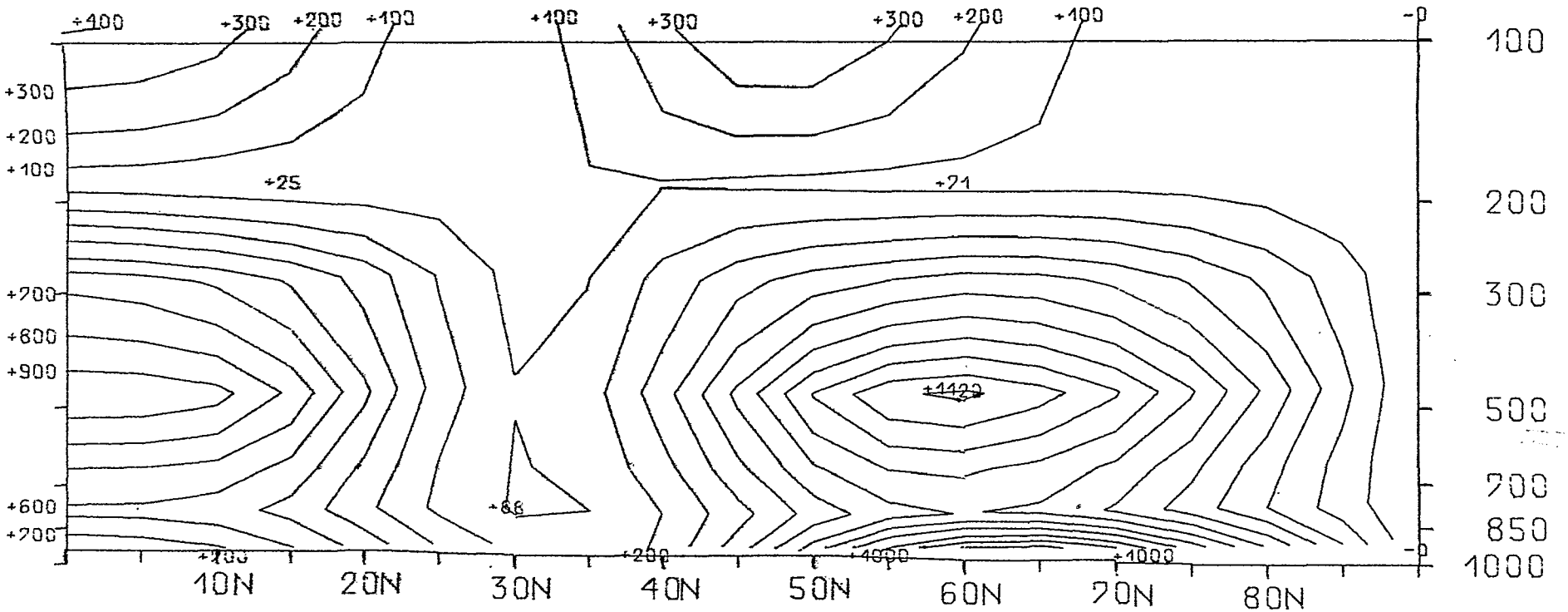

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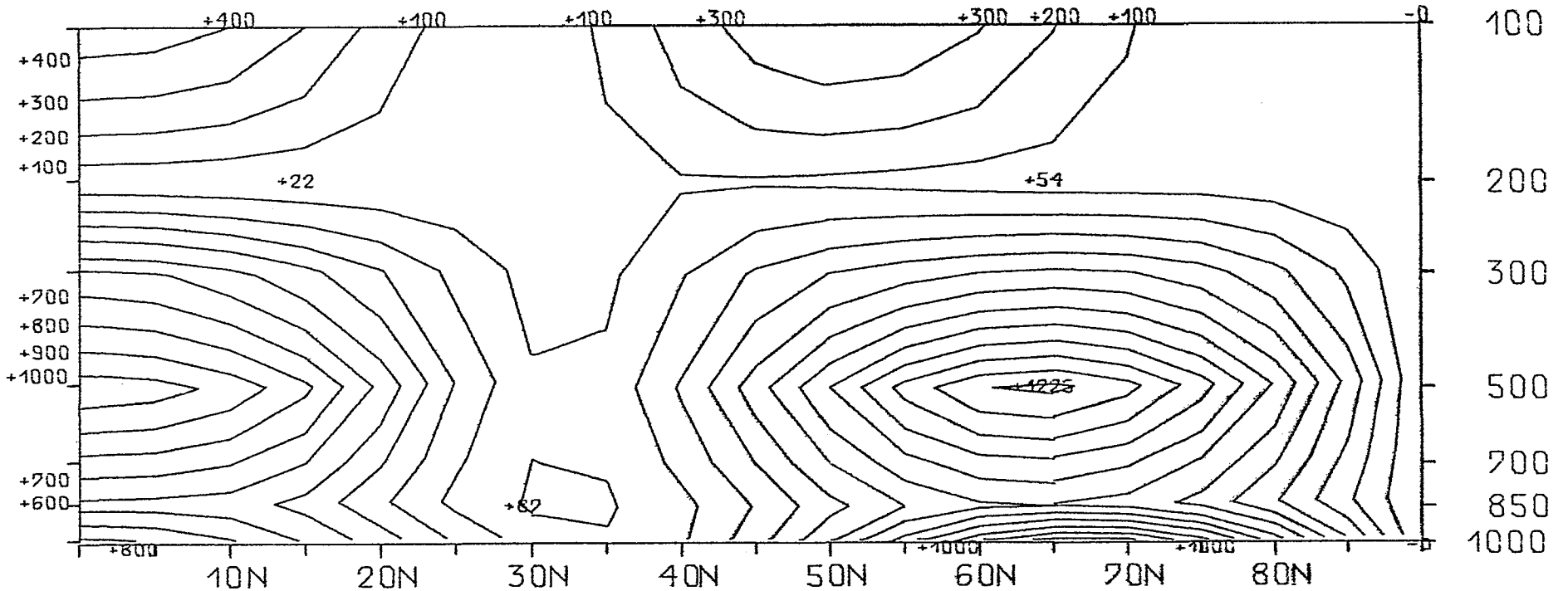
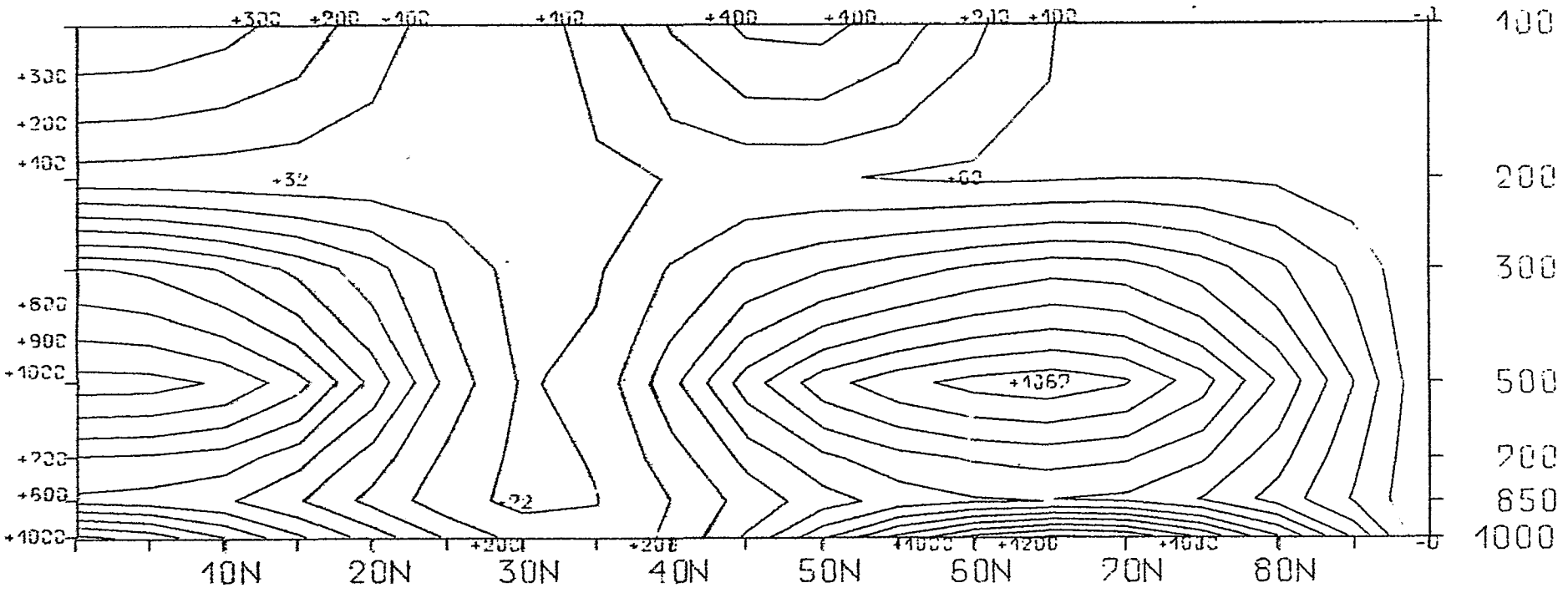


10^{-3} J CM^{-2} MB^{-1} JAN. 75

TOC

Abb.43

KENNZIFFER: 40017600

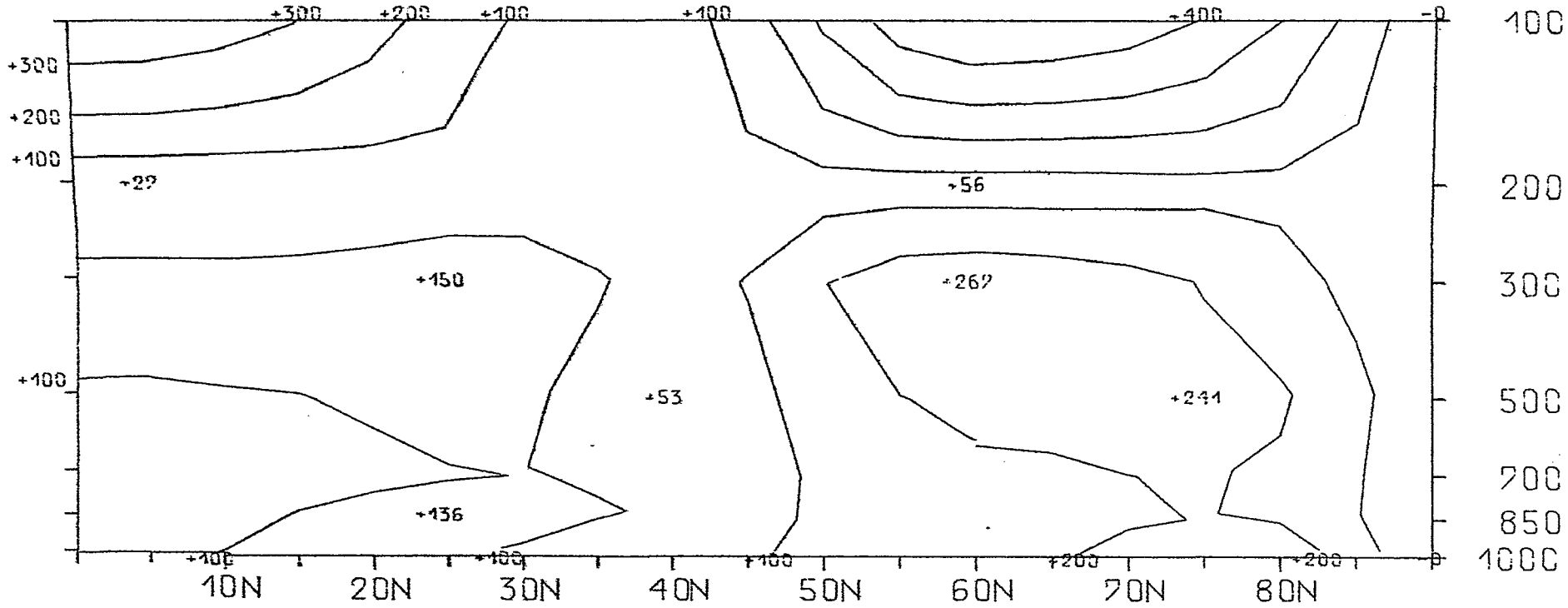


A_{TOC}

10^{-3} J CM^{-2} MB^{-1} JAN. 76

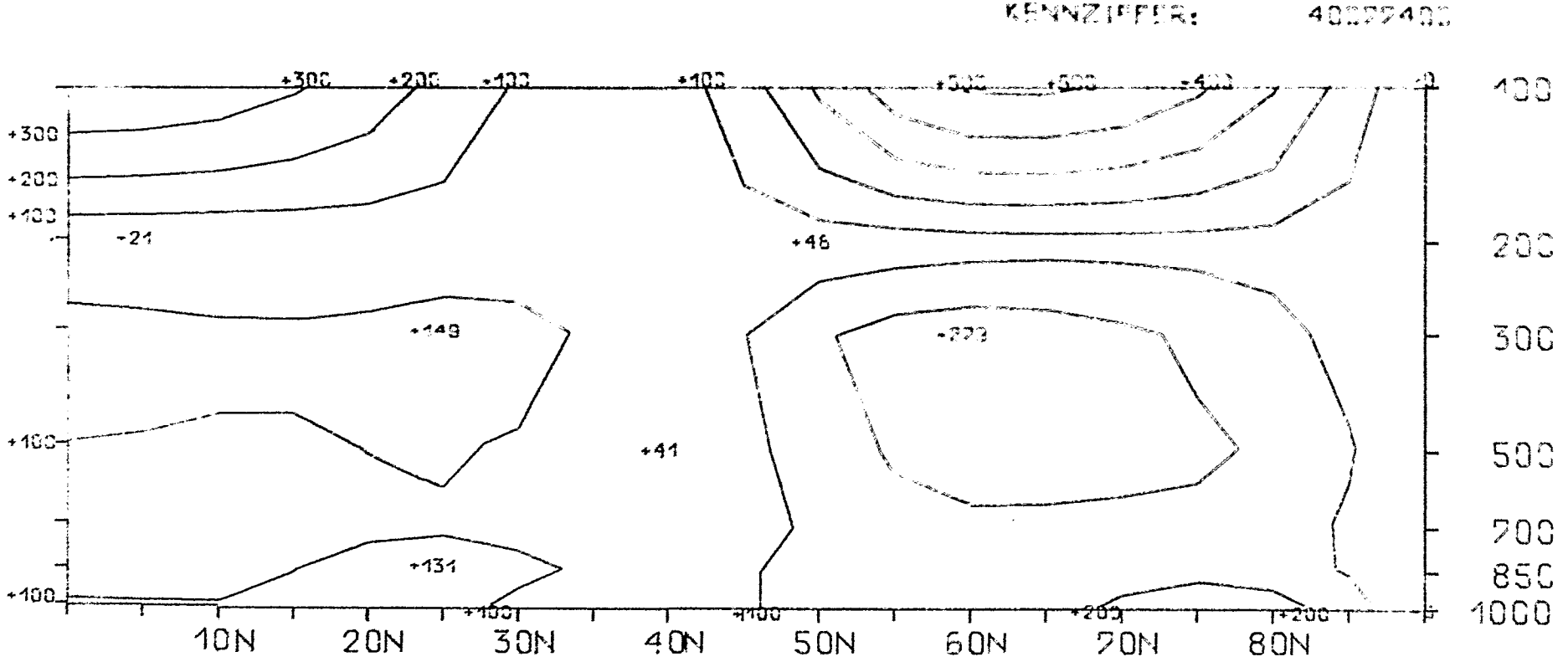
Abb.44

KENNZIFFER: 40022300



A_{TOC} 10^{-3} J CM^{-2} MB^{-1} JULY 73

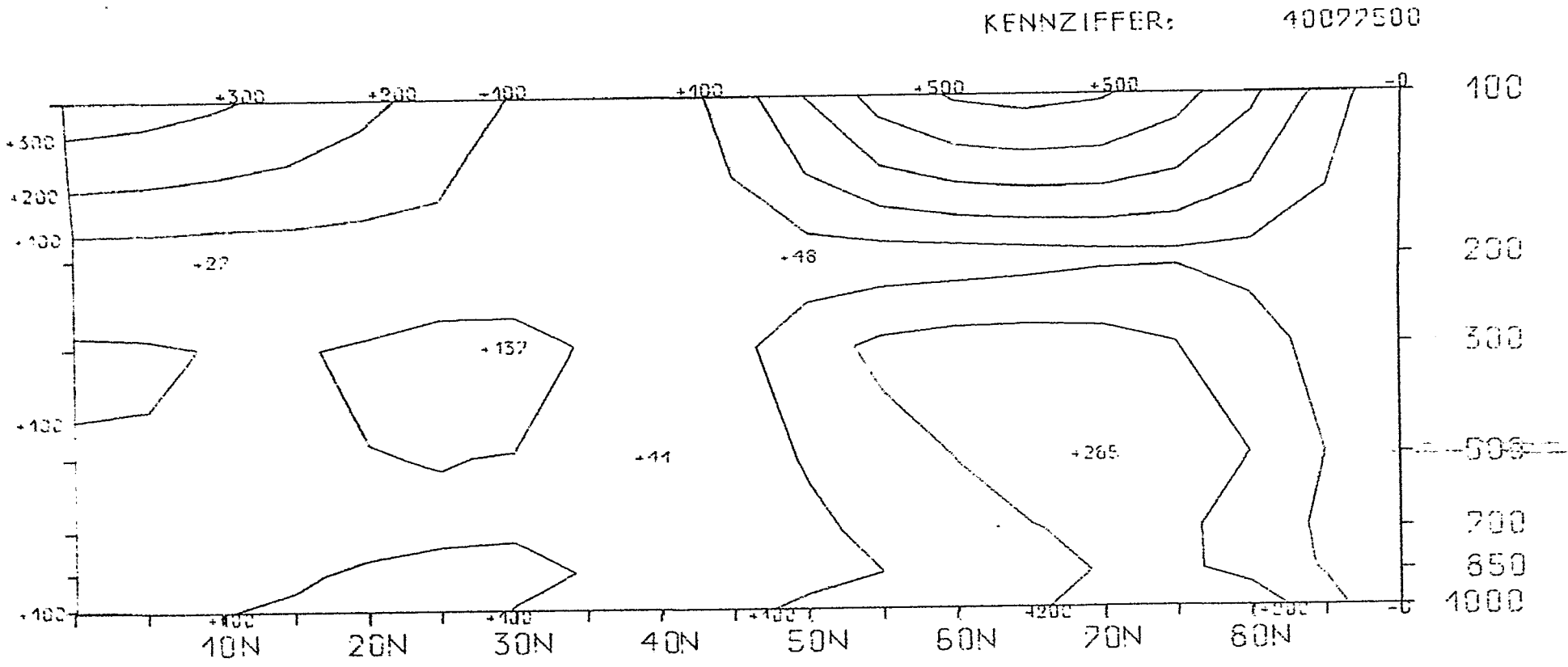
Abb.45



10^{-3} J CM^{-2} MB^{-1} JULY 74

A_{TOC}

Abb.46

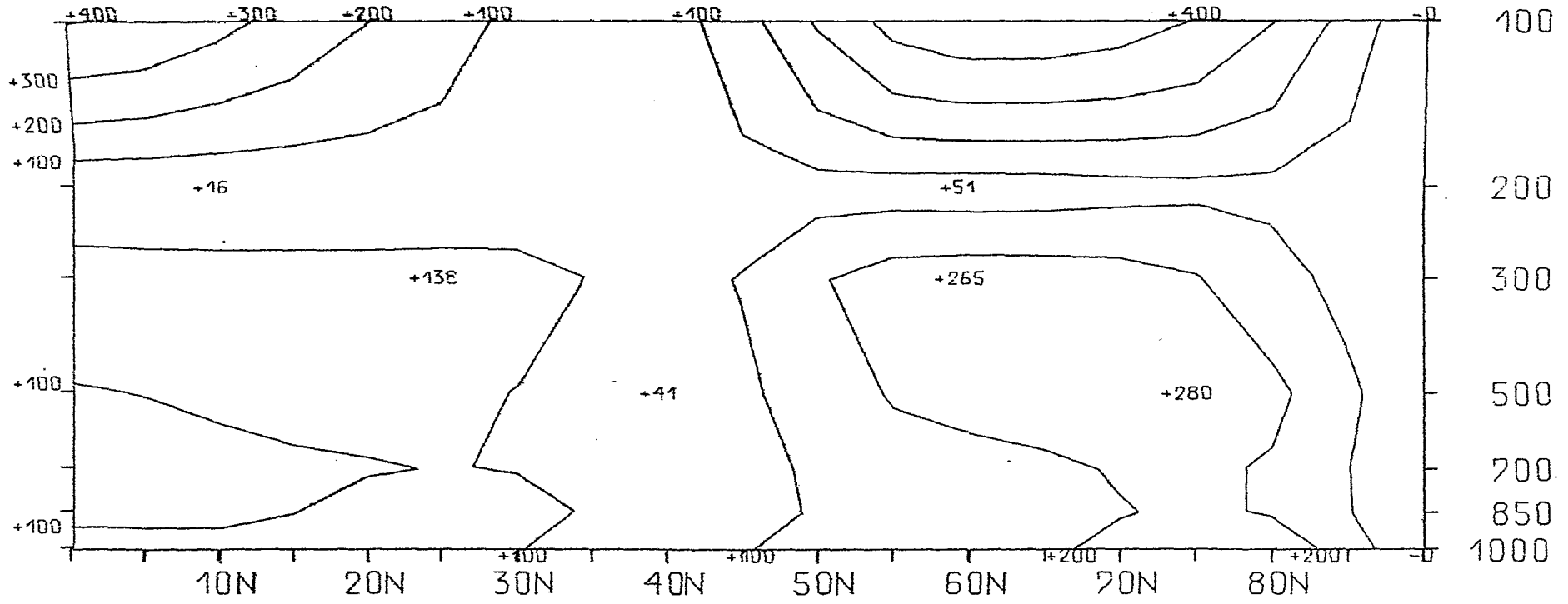


10^{-3} J CM^{-2} MB^{-1} JULY 75

A_{TOC}

Abb. 47

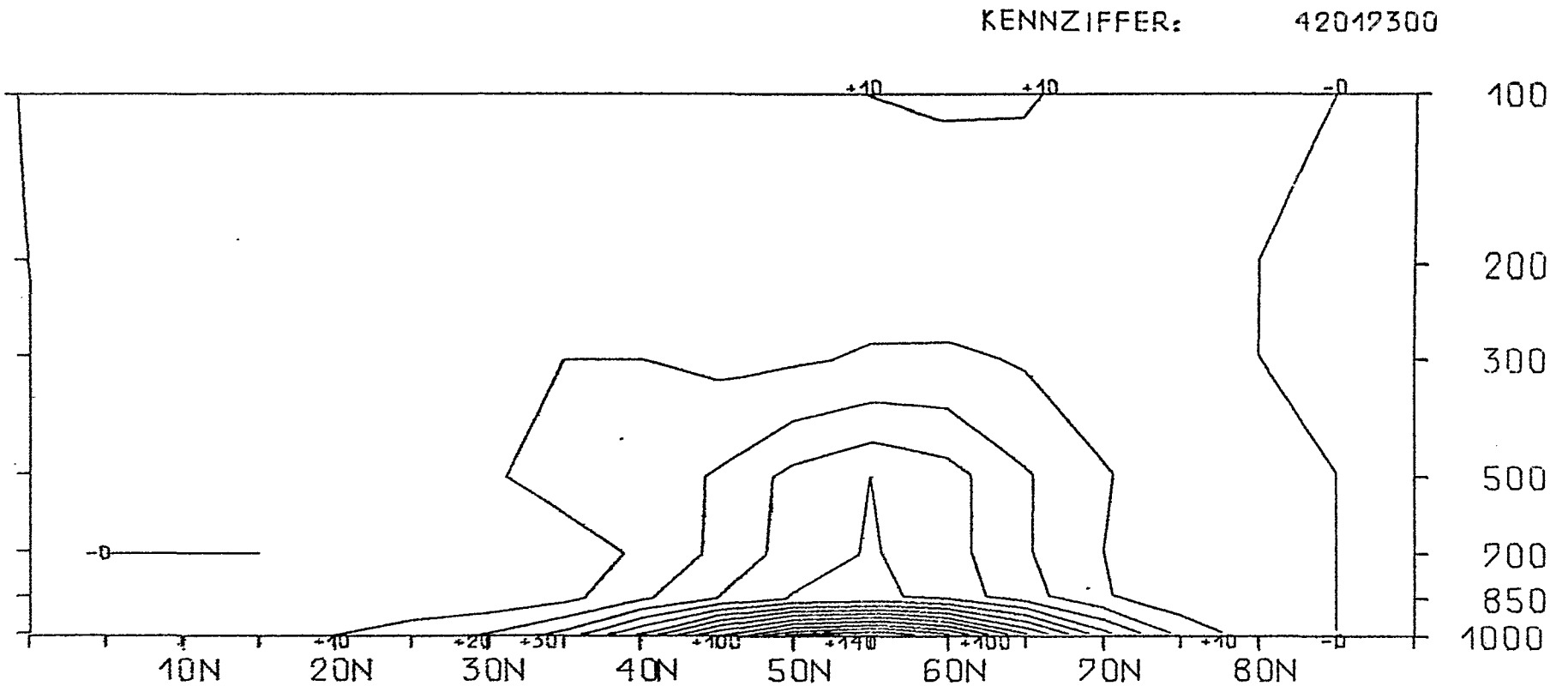
KENNZIFFER: 40077600



10^{-3} J CM^{-2} MB^{-1} JULY 76

A_{TOC}

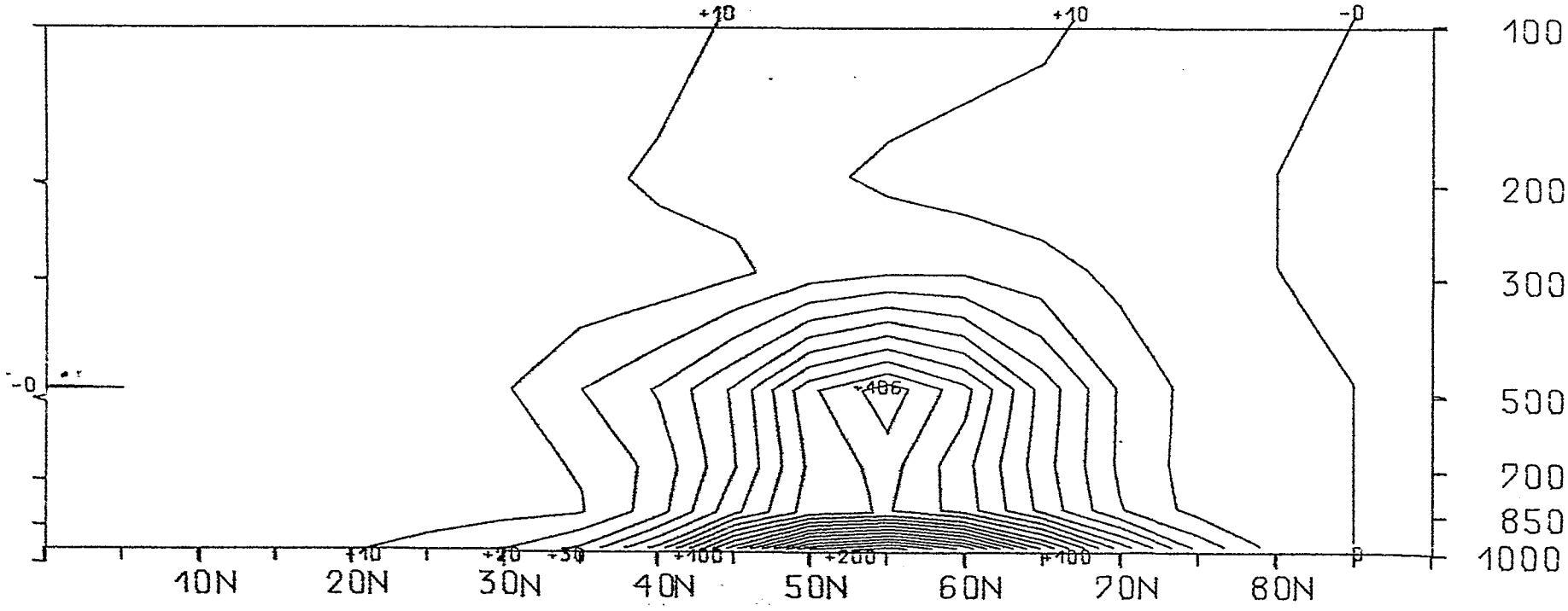
Abb.48



A MSE. 2 - 3 **10^{-3} J CM^{-2} MB^{-1}** JAN. 73

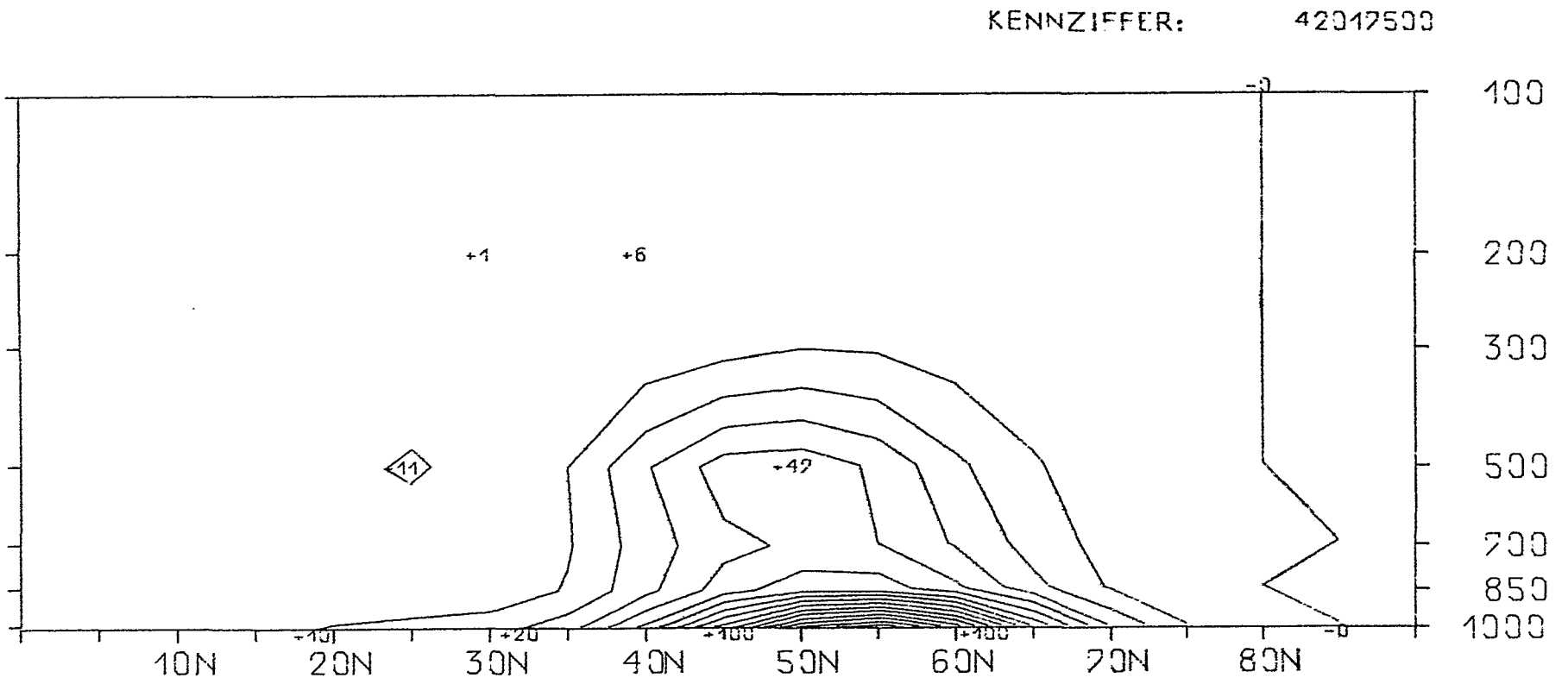
Abb.49

KENNZIFFER: 42012400



10^{-3} J CM^{-2} MB^{-1} JAN. 74

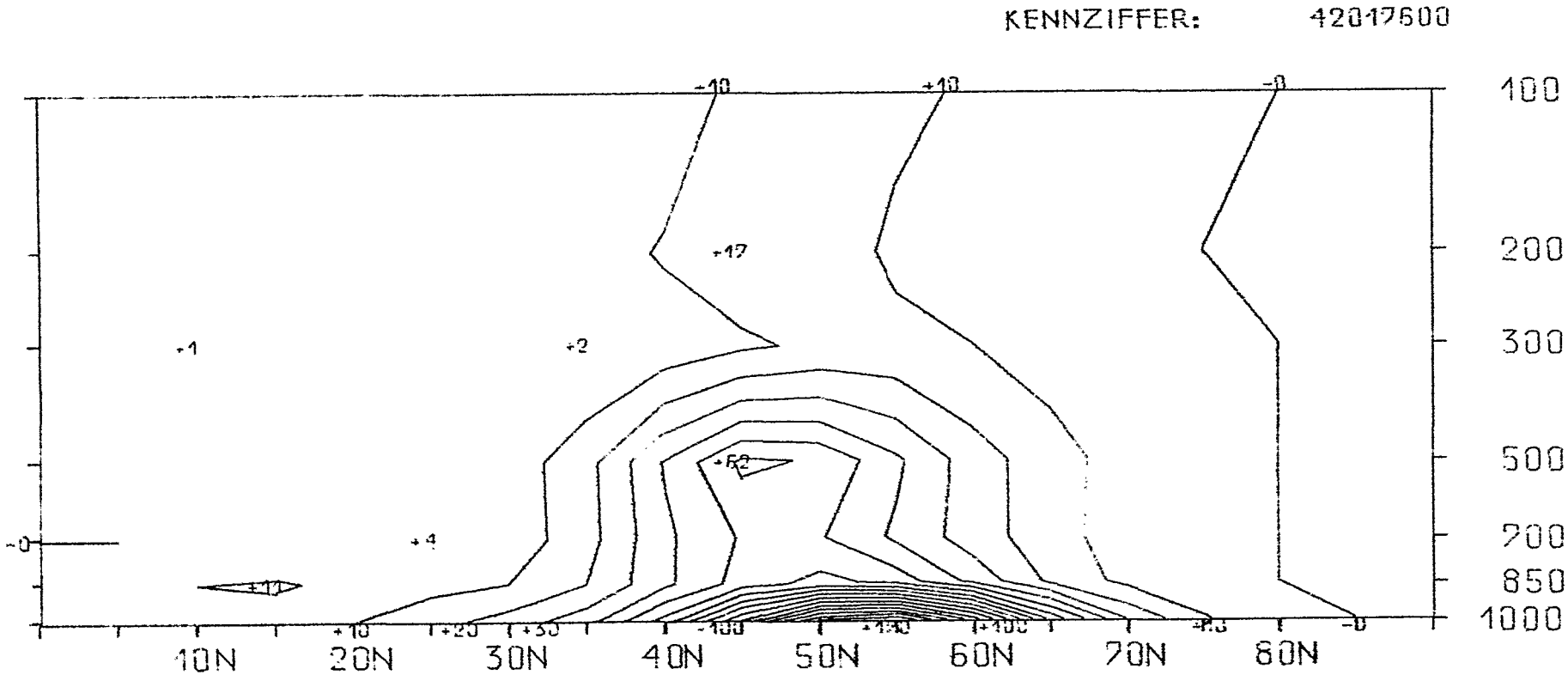
A MSE, 2 - 3



A MSE, 2 - 3

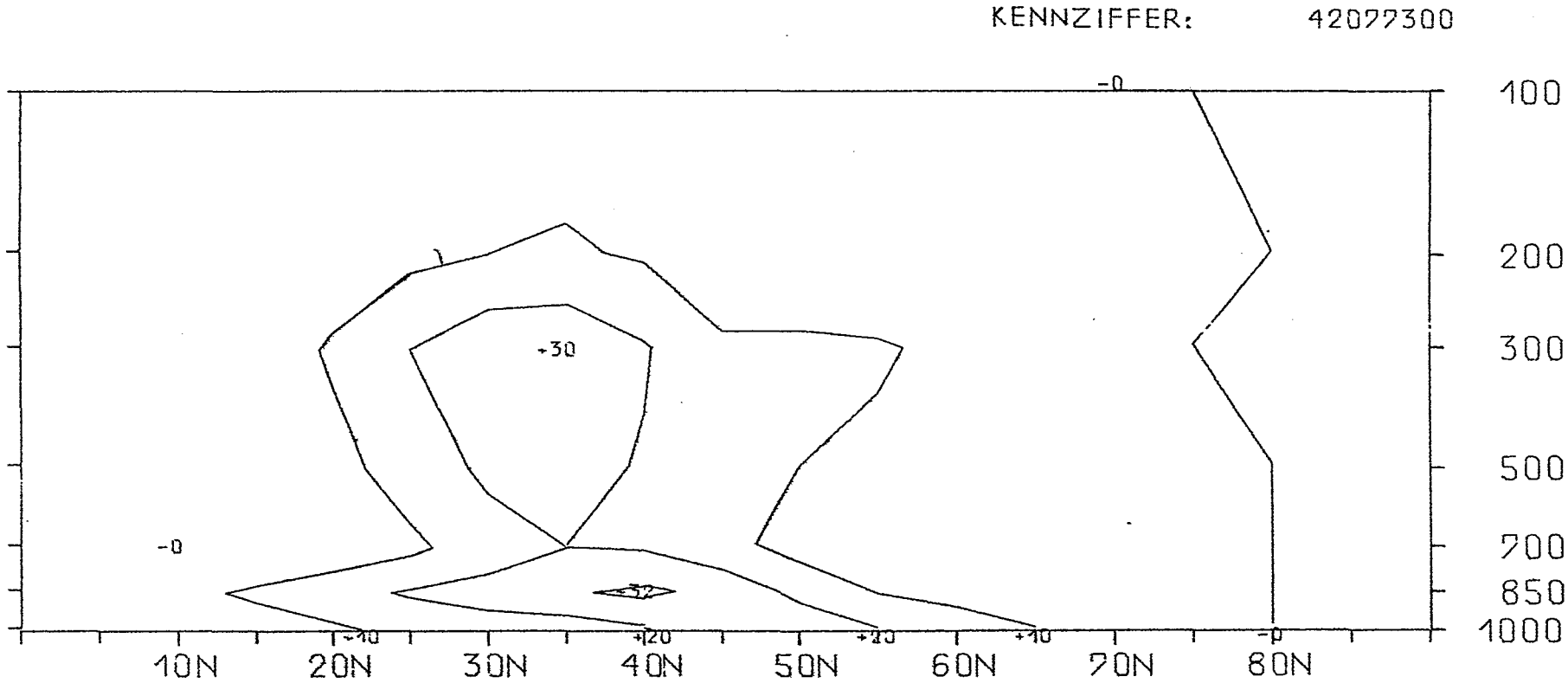
10^{-3} J CM^{-2} MB^{-1} JAN.75

Abb.51



10^{-3} J CM^{-2} MB^{-1} JAN.76

Abb.52



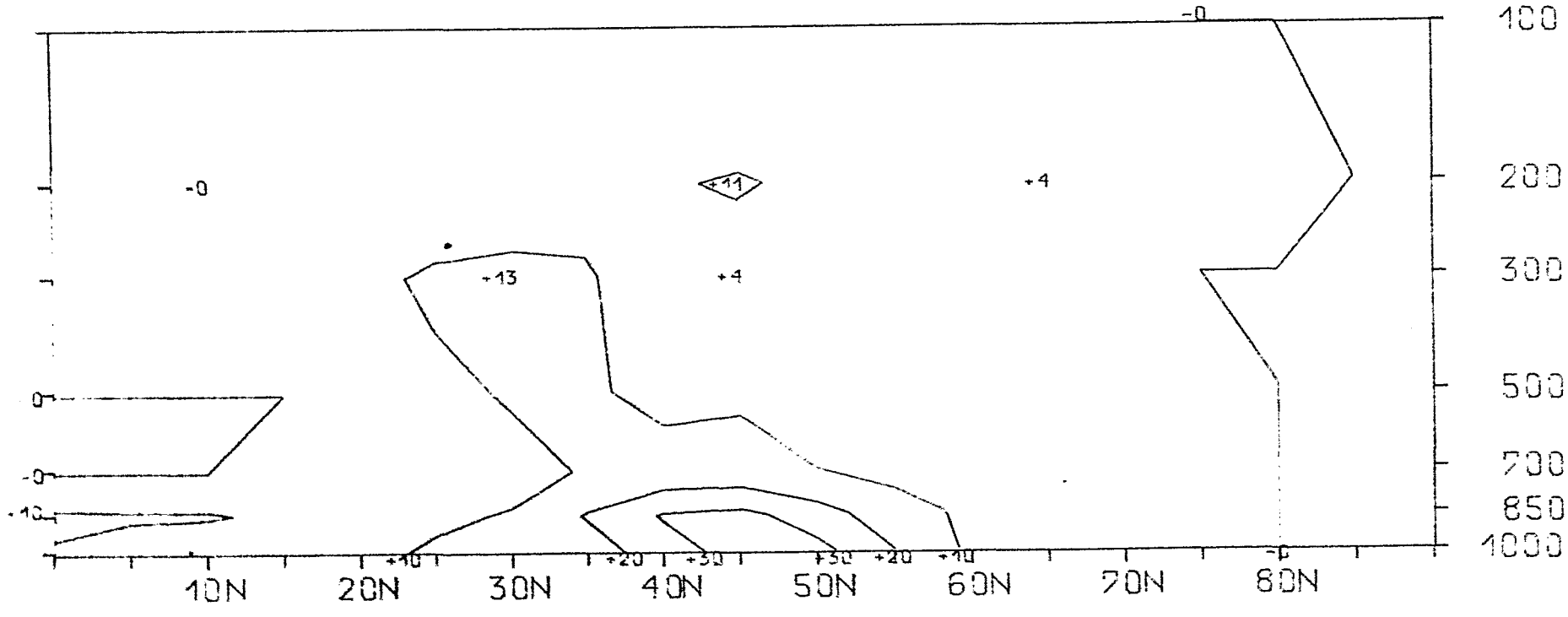
10^{-3} J CM^{-2} MB^{-1} JULY 73

A

MSE, 2 - 3

Abb.53

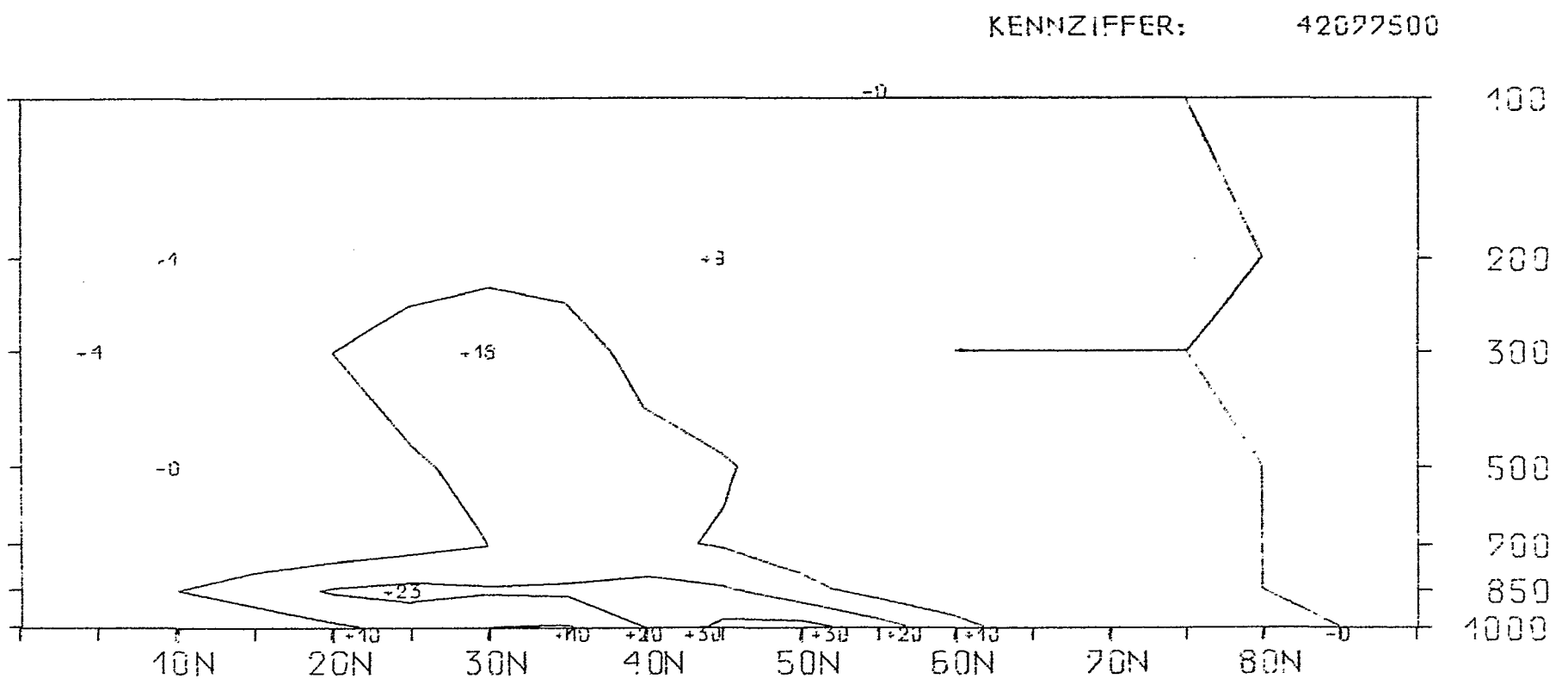
KENNZIFFER: 42022400



10^{-3} J CM^{-2} MB^{-1} JULY 74

A MSE: 2 - 3

Abb.54



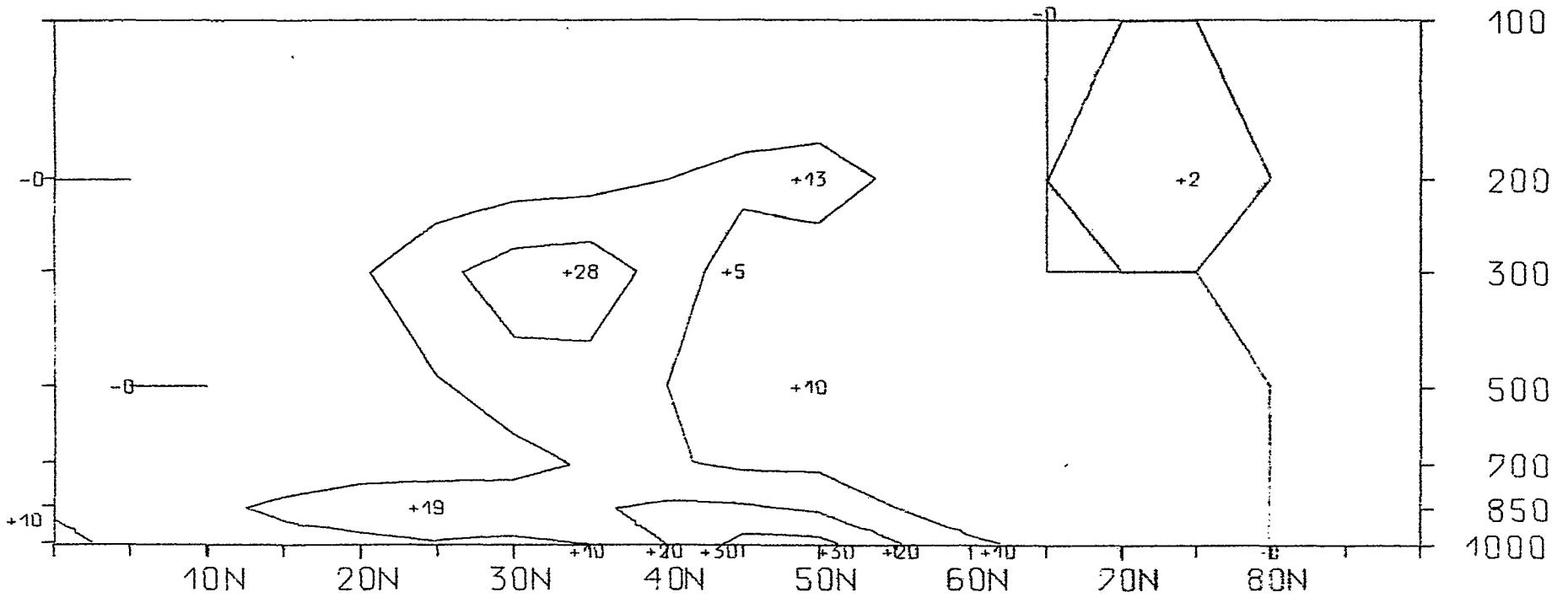
10^{-3} J CM^{-2} MB^{-1} JULY 75

A

MSE. 2 - 3

Abb.55

KENNZIFFER: 42077600



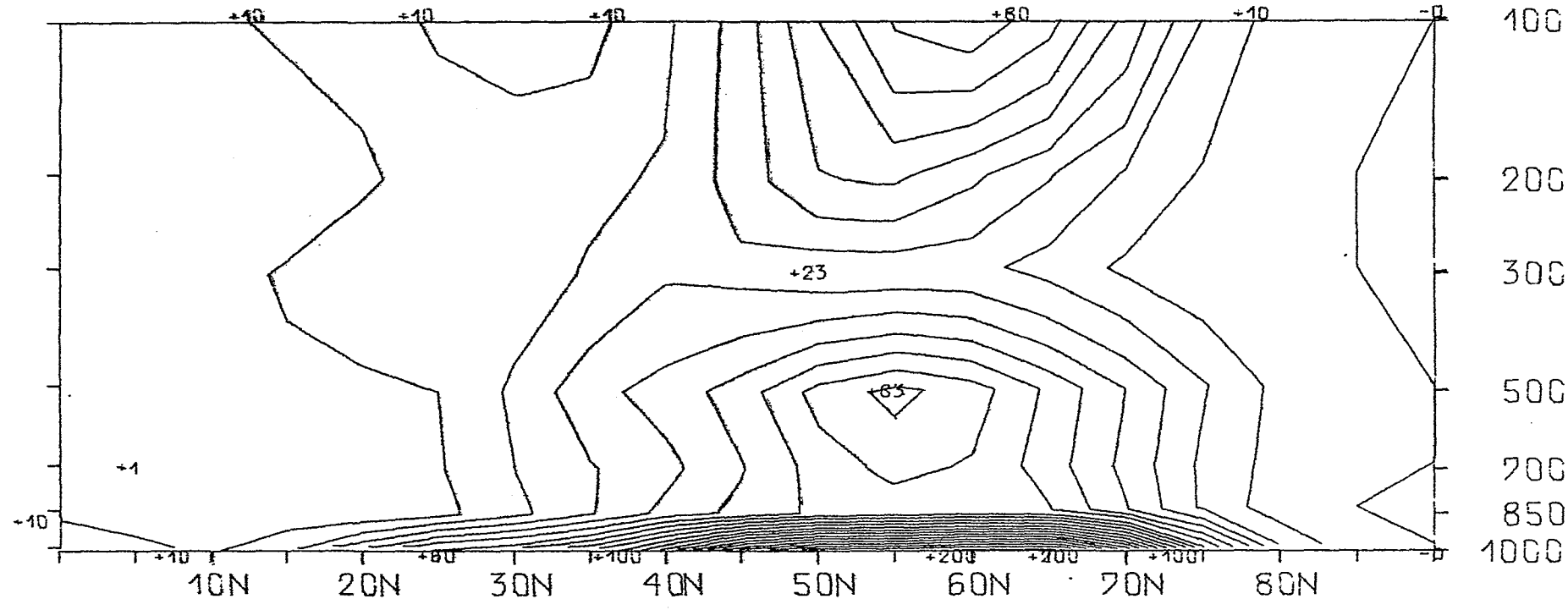
10^{-3} J CM^{-2} MB^{-1} JULY 76

A

MSE: 2 - 3

Abb.56

KENNZIFFER: 43012300

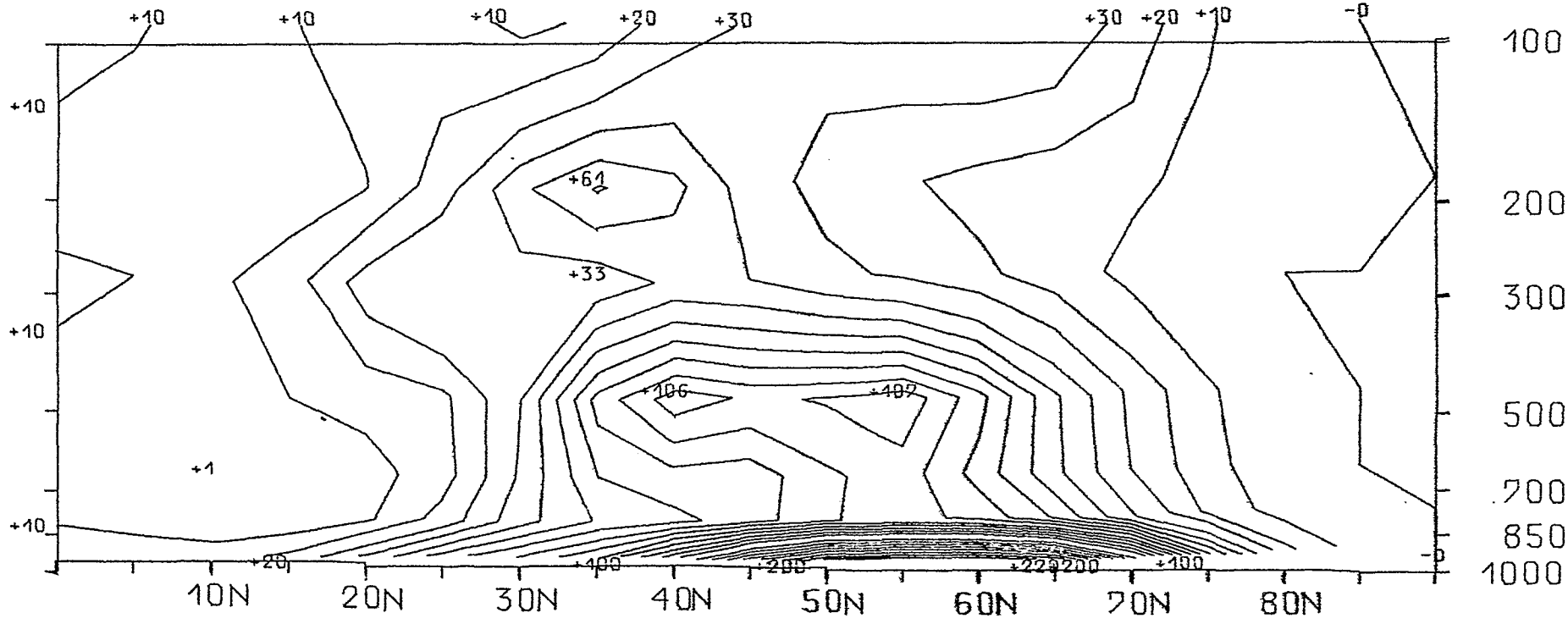


A MSE, 1 - 3

10^{-3} J CM^{-2} MB^{-1} JAN. 73

Abb.57

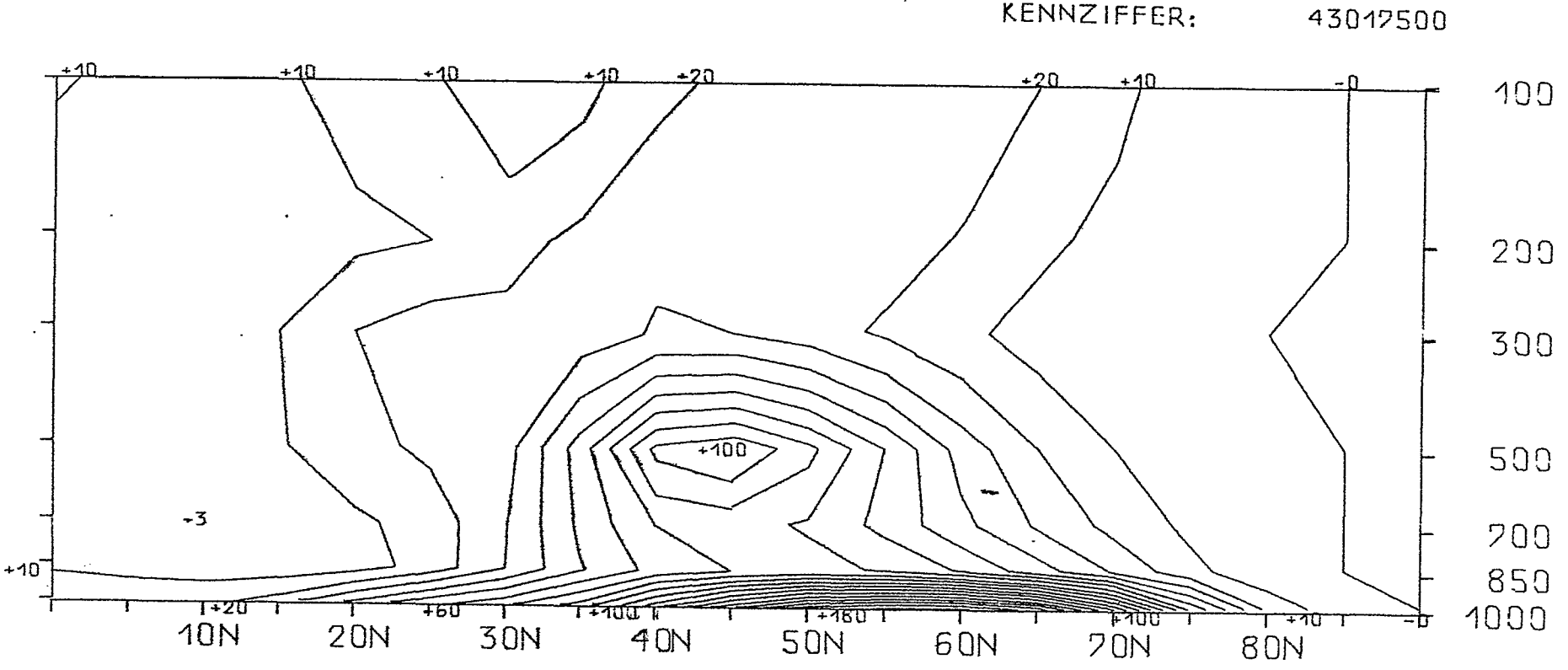
KENNZIFFER: 43012400



A MSE, 1 - 3

10^{-3} J CM^{-2} MB^{-1} JAN. 74

Abb.58

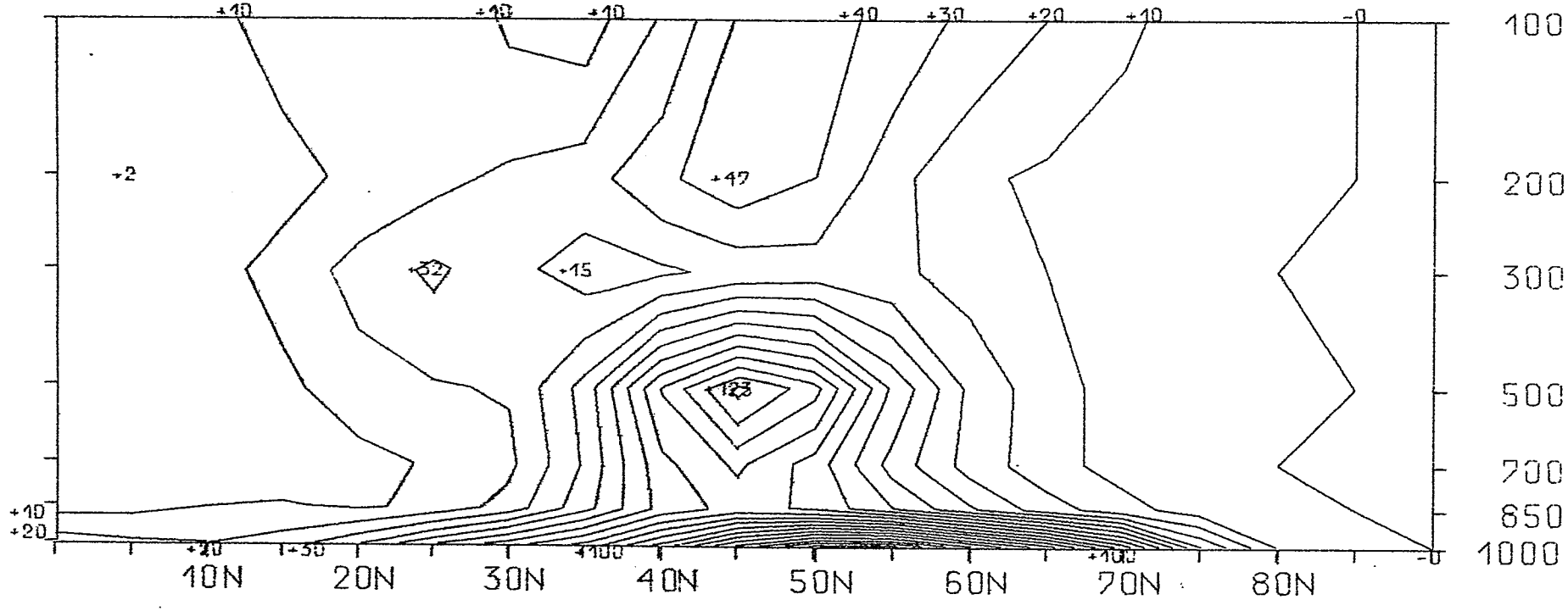


A MSE, 1 - 3

10^{-3} J CM^{-2} MB^{-1} JAN. 75

Abb.59

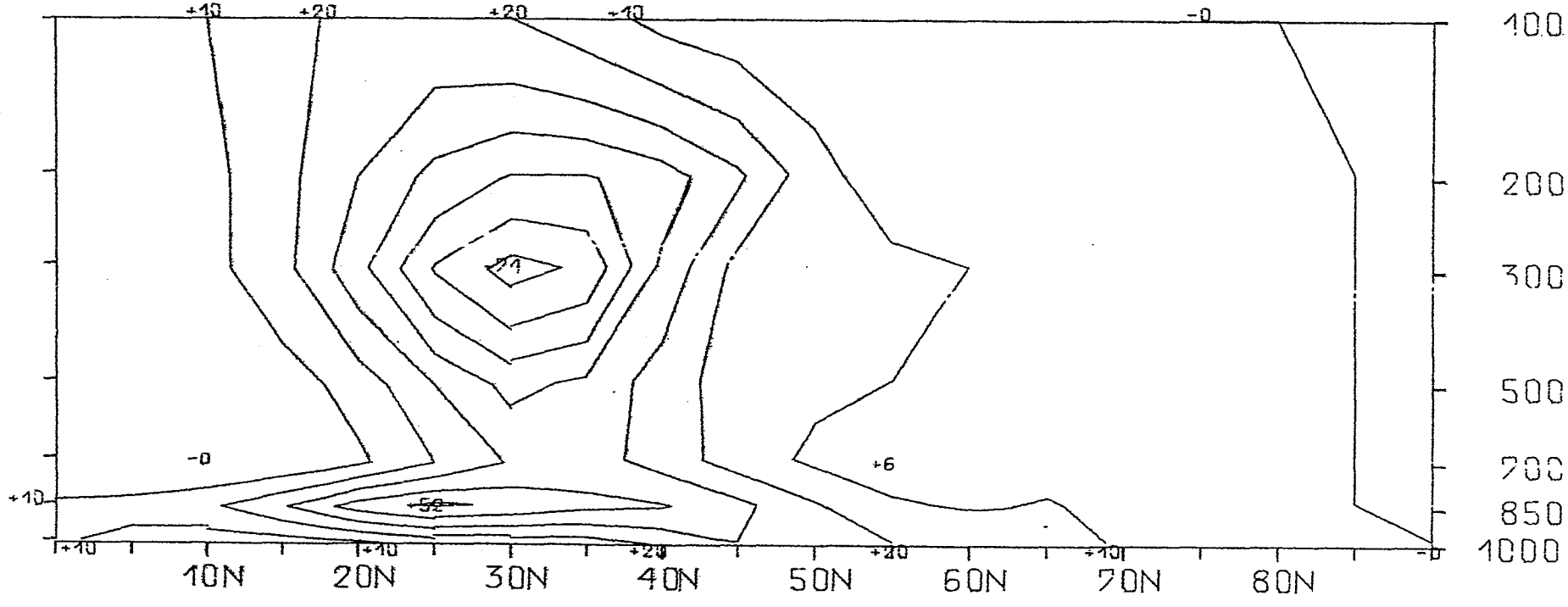
KENNZIFFER: 43012600



$A_{MSE,\ 1-3}$ **10^{-3} J CM^{-2} MB^{-1}** JAN. 76

Abb 60

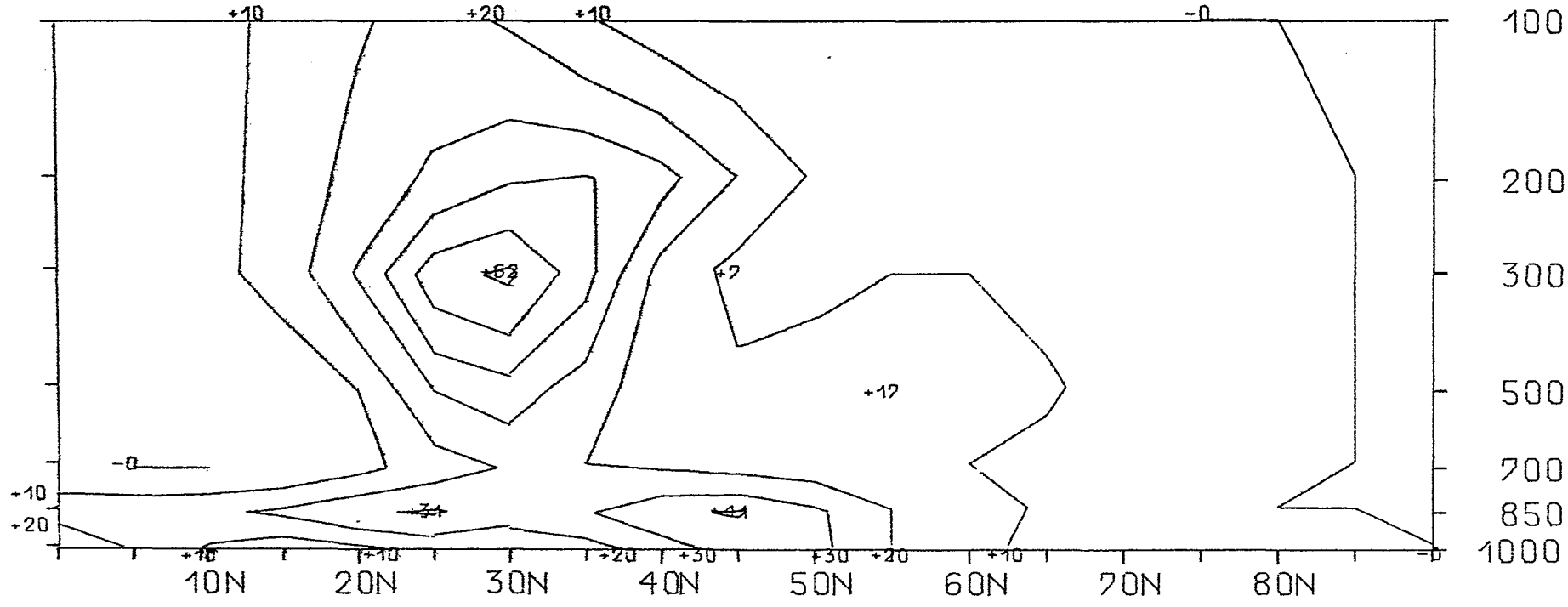
KENNZIFFER: 43022300



A MSE, 1 - 3 10^{-3} J CM^{-2} MB^{-1} JULY 73

Abb.61

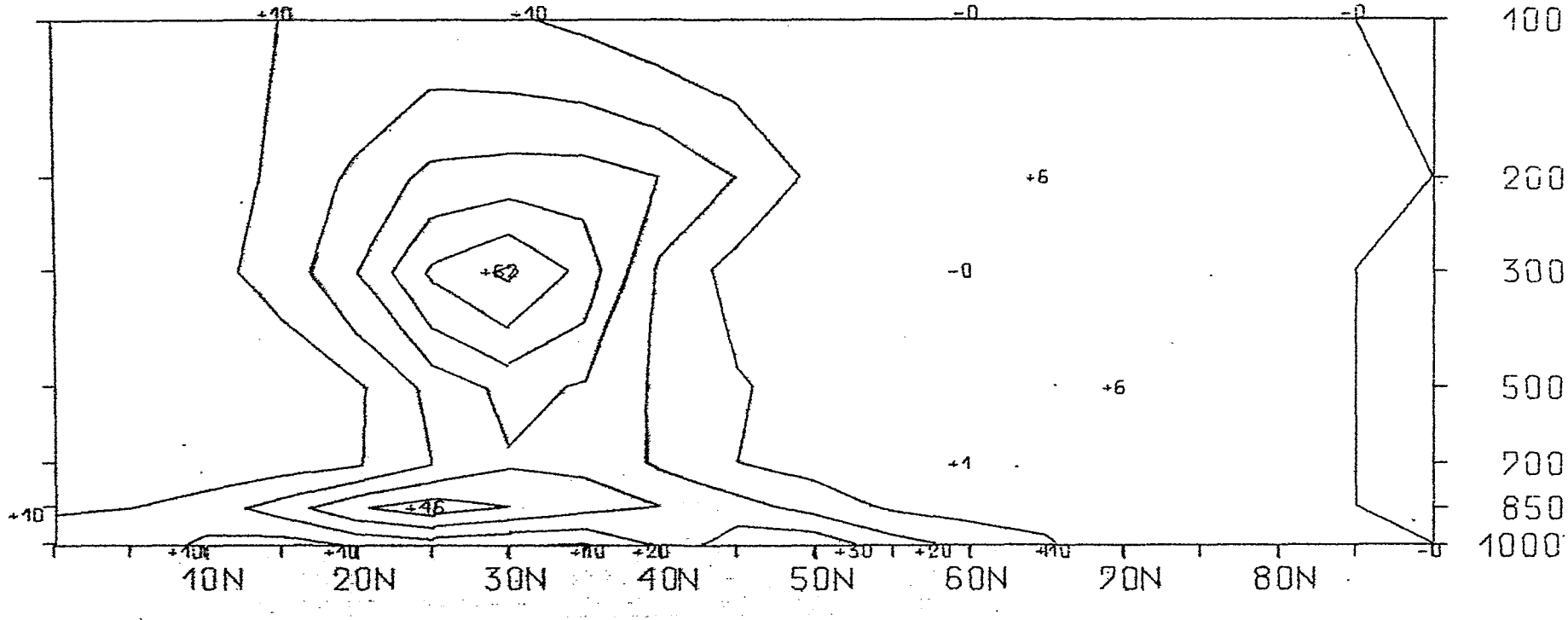
KENNZIFFER: 43022400



A MSE, 1 - 3 10^{-3} J CM^{-2} MB^{-1} JULY 74

Abb.62

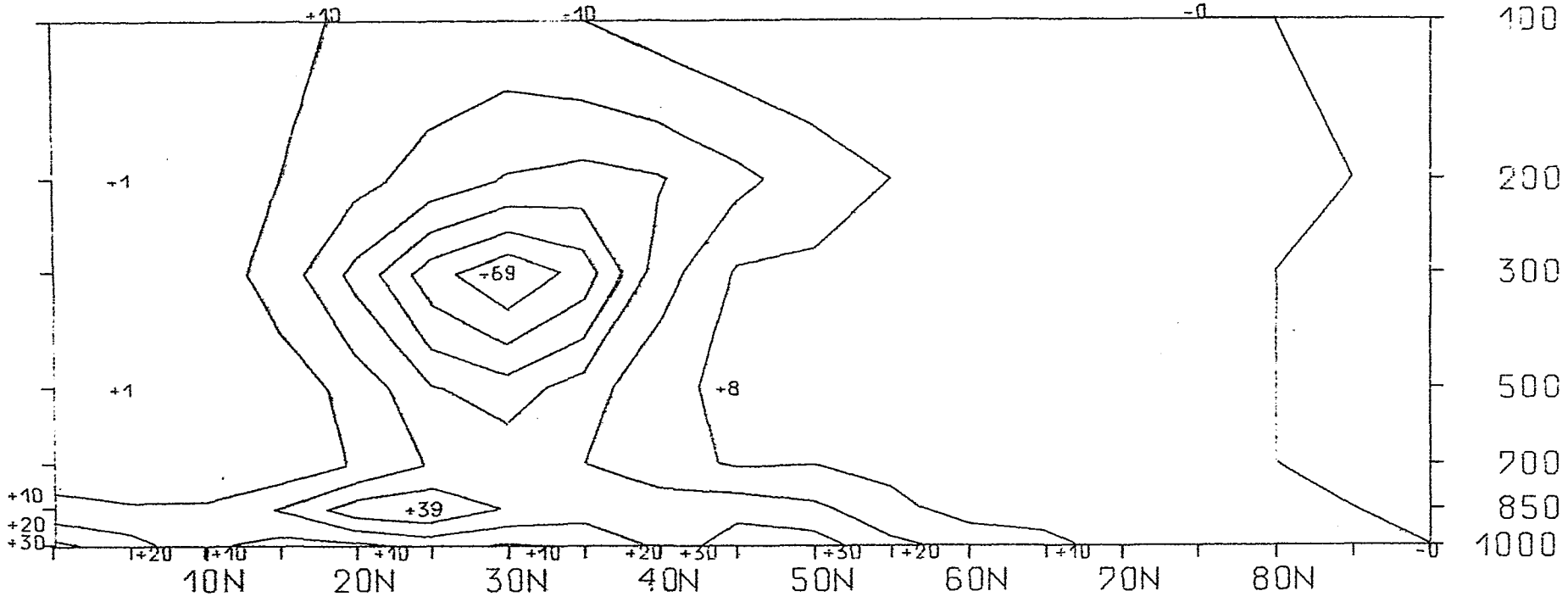
KENNZIFFER: 43022500



10^{-3} J CM^{-2} MB^{-1} JULY 75

A MSE, 1 – 3

KENNZIFFER: 43022600



10^{-3} J CM^{-2} MB^{-1} JULY 76

A
MSE, 1 - 3

Abb 61